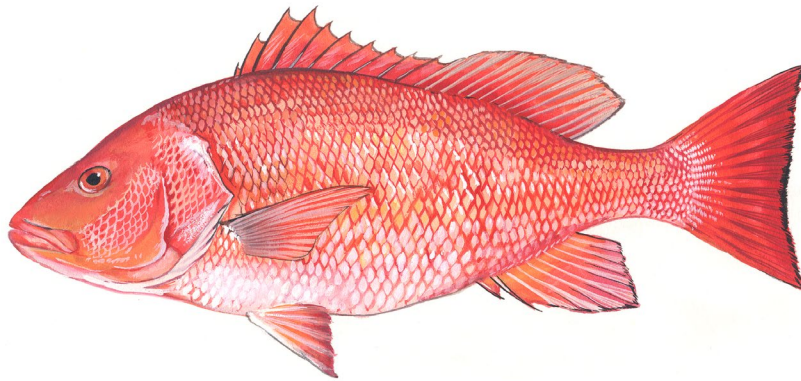


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**DRAFT Regulatory
Amendment 35**
to the Fishery Management Plan for the
Snapper Grouper Fishery of the South
Atlantic Region



**Red snapper catch limits and gear modifications while fishing
recreationally for snapper grouper species**



**DRAFT Environmental Assessment, Initial Regulatory Flexibility Analysis, and
Regulatory Impact Review**

December 2022

South Atlantic Fishery Management Council
4055 Faber Place Drive; Suite 201
North Charleston, SC 29405

Award Number FNA15NMF4410010

Regulatory Amendment 35 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

Proposed actions:

Revise the acceptable biological catch and annual catch limits for red snapper in the South Atlantic based on the results of the latest stock assessment, and implement management measures to reduce dead discards for the South Atlantic snapper grouper fishery.

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This EA is being prepared using the 2020 CEQ NEPA Regulations as modified by the Phase I 2022 revisions. The effective date of the 2022 revisions was May 20, 2022, and reviews begun after this date are required to apply the 2020 regulations as modified by the Phase I revisions unless there is a clear and fundamental conflict with an applicable statute. This EA began on [Date] and accordingly proceeds under the 2020 regulations as modified by the Phase I revisions.

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Summary

Why is the South Atlantic Fishery Management Council considering action?

The South Atlantic Fishery Management Council (Council) is considering action to respond to the most recent stock assessment for South Atlantic red snapper (SEDAR 73 2021). The results of SEDAR 73 indicated that South Atlantic red snapper are overfished, overfishing is occurring, and the overfishing is being primarily driven by high numbers of dead discards by the recreational sector. While the number of red snapper dead discards has an especially strong impact on allowable harvest levels for red snapper, as explained in Chapter 1, these dead discards also affect allowable harvests of other stocks managed under the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP). Therefore, actions to adjust red snapper catch levels based on the SEDAR 73 (2021) stock assessment and to reduce dead discards for all species in the snapper grouper fishery management unit are considered in this framework amendment.

This framework amendment is the first of a multi-step approach by the Council to end overfishing of South Atlantic red snapper. While SEDAR 73 indicated red snapper continue to be overfished, the assessment also showed that the stock is increasing in abundance and is making progress toward rebuilding. In addition, this framework amendment will be followed by the completion of a Management Strategy Evaluation (MSE) of the snapper grouper fishery (which is currently in progress) that will provide information to manage this multi-species fishery in a more holistic manner. The MSE will model different combinations of scenarios (what populations could look like) and management strategies (ways that management can affect these populations) to determine what management actions are most critical to achieve the Council's goals and objectives for the snapper grouper fishery. These scenarios and management strategies can include multiple stocks, so resulting management advice can include multi-species actions and impacts, which differs from current management that mostly makes management changes for single species. The Council intends that the MSE will then be followed by an amendment to the Snapper Grouper FMP that will implement Council actions based on the MSE and the most current scientific information available at that time.

Purpose for Action

Purpose: The *purpose* of this **framework** amendment is to revise the **overfishing limit**, acceptable biological catch and annual catch limits for red snapper in the South Atlantic based on the results of the latest stock assessment; and implement management measures to reduce dead **discards** for the South Atlantic snapper grouper fishery.

Need: The *need* for this framework amendment is to ensure red snapper catch limits are based on the best scientific information available and to **end address** overfishing of the South Atlantic red

snapper stock **by reducing dead discards**, while minimizing negative social and economic effects to the extent practicable, consistent with the Magnuson-Stevens Fishery Conservation and Management Act and its National Standards.

What are the overfishing limit and acceptable biological catch recommendations for South Atlantic red snapper?

The Council’s Scientific and Statistical Committee (SSC) reviewed the South Atlantic red snapper stock assessment (SEDAR 73 2021) at their April 2021 and July 2021 meetings. The SSC found that the assessment addressed the terms of reference appropriately, was conducted using the best scientific information available, was adequate for determining stock status and supporting fishing level recommendations, and addressed uncertainty consistent with expectations and available information.

The SSC reviewed projections depicting a variety of recruitment, fishing mortality, and discard mortality scenarios. The SSC recommended the overfishing limit (OFL) be based on results of a projection that included recent (last 10 years) average recruitment, a discard mortality rate that accounts for descending device usage based on current and predicted levels of use, a fishing mortality rate of F30% (the fishing mortality rate when the spawning potential ratio equals 30%; a proxy for F_{MSY}), and no reallocation of fishing mortality from discards to landings. This projection was run out through 2044 to determine if the stock would rebuild within the rebuilding timeframe. The projections indicated the stock would rebuild within the rebuilding timeframe. Recommended landings and projected discard levels are provided for the next 5 years (Table S.1).

The current OFL for red snapper is 56,000 fish, and the current acceptable biological catch (ABC) is 53,000 fish, based on the SSC’s recommendation for the 2018 fishing year following the SEDAR 41 stock assessment (2017). The total ACL is 42,510 fish (Amendment 43, SAFMC 2017).

Table S.1. Overfishing limit (OFL) and acceptable biological catch (ABC) levels recommended for South Atlantic red snapper by the Scientific and Statistical Committee (SSC), based on projections from SEDAR 73 (2021) and relative to the current annual catch limit (ACL) of 42,510 fish. The SSC recommended an ABC equal to the OFL, so values in the table represent the ABC and OFL landings and dead discards in pounds whole weight (lbs ww) and numbers of fish.

Year	ABC/OFL Landings (lbs ww)	ABC/OFL Dead Discards (lbs ww)	ABC/OFL Landings (numbers of fish)	ABC/OFL Dead Discards (numbers of fish)	Percent Reduction in ABC/OFL Landings (numbers of fish) from Current ACL
2023	327,000	1,036,000	28,000	202,000	34.13%
2024	368,000	1,076,000	31,000	207,000	27.08%
2025	408,000	1,104,000	33,000	210,000	22.37%
2026	446,000	1,122,000	35,000	211,000	17.67%
2027+	480,000	1,133,000	36,000	212,000	15.31%

What actions are being proposed in this amendment?

Regulatory Amendment 35 to the Snapper Grouper FMP proposes the following:

Action 1. Reduce the South Atlantic red snapper acceptable biological catch, total annual catch limit, and sector annual catch limits, and establish an annual optimum yield

Purpose of Action: The latest stock assessment (SEDAR 73 2021) indicated the stock is overfished and experiencing overfishing. Action is needed because the SSC recommended a new ABC based on results of SEDAR 73, and the ABC, total ACL, and sector ACLs must be adjusted accordingly, and an annual OY established. The Council can not set the total ACL above the SSC’s recommended ABC.

Preferred Alternative: **To be determined**

Action 2. Prohibit the use of electrically or hydraulically-powered reels to fish for snapper grouper species by the recreational sector

Purpose of Action: The latest stock assessment (SEDAR 73 2021) indicated the South Atlantic red snapper stock is experiencing overfishing due primarily to mortality associated with recreational discards. Other snapper grouper species also experience large numbers of dead discards, which limit the Council’s ability to prevent overfishing and reduce the number of fish that can be landed by the fishery. Action is needed to improve efficiency in the South Atlantic recreational snapper grouper fishery, consistent with National Standard 5 of the Magnuson-Stevens Act.

Preferred Alternative: **To be determined**

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Action 3. Prohibit the use of more than one hook per line for the snapper grouper recreational sector

Purpose of Action: The latest stock assessment (SEDAR 73 2021) indicated the South Atlantic red snapper stock is experiencing overfishing due primarily to mortality associated with recreational discards. Other snapper grouper species also experience large numbers of dead discards, which limit the Council's ability to prevent overfishing and reduce the number of fish that can be landed by the fishery. Action is needed to improve efficiency in the South Atlantic recreational snapper grouper fishery, consistent with National Standard 5 of the Magnuson-Stevens Act.

Preferred Alternative: **To be determined**

Chapter 1. Introduction

1.1. What actions are being proposed in this framework amendment?

The proposed actions in Regulatory Amendment 35 to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) would revise the overfishing limit (OFL), acceptable biological catch (ABC) and annual catch limits (ACL), and establish an annual optimum yield (OY) for red snapper in the South Atlantic based on the results of the latest stock assessment (SEDAR 73 2021), and modify allowable gear types for the recreational sector when fishing for snapper grouper species. These management changes to allowable gear are intended to reduce widespread dead discards in the South Atlantic snapper grouper fishery and contribute to ending overfishing of red snapper.

South Atlantic Fishery Management Council

- Responsible for conservation and management of fish stocks in the South Atlantic Region
- Consists of 13 voting members who are appointed by the Secretary of Commerce, 1 representative from each of the 4 South Atlantic states, the Southeast Regional Administrator of NMFS, and 4 non-voting members
- Responsible for developing fishery management plans and amendments under the Magnuson-Stevens Act; recommends actions to NMFS for implementation
- Management area is from 3 to 200 nautical miles off the coasts of North Carolina, South Carolina, Georgia, and east Florida through Key West, except for Mackerel which is from New York to Florida, and Dolphin-Wahoo, which is from Maine to Florida

This framework amendment is the first of a multi-step approach to end overfishing of South Atlantic red snapper. This framework amendment will be followed by the completion of a Management Strategy Evaluation (MSE) of the snapper grouper fishery (which is currently in progress) that will provide information to manage this multi-species fishery in a more holistic manner. Additionally, several scientific projects researching topics such as catch and discard areas, spatial abundance, overall distribution and abundance, and effects of alternative management scenarios are also currently underway. The MSE will be followed by an amendment to the Snapper Grouper FMP that will implement Council actions based on the MSE and the most current and best scientific information available at that time. The collective actions of this framework amendment and the amendment that will follow the MSE are expected to end overfishing of red snapper.

Definitions

Overfished: A stock is considered overfished when the population size is considered too low, whether because of fishing or other causes. If this occurs, a rebuilding plan is needed. For managed stocks, overfished thresholds, also known as minimum stock size thresholds (MSST), are established so that if the population size falls below the threshold, then the population is considered overfished.

- Overfished is defined as spawning stock biomass (SSB) < minimum stock size threshold (MSST)

Undergoing Overfishing: A stock is considered to be undergoing overfishing if the (annual catch) rate of removal from the population is too high.

- Overfishing is defined as: full fishing mortality rate (F) > maximum fishing mortality threshold (MFMT)

1.2. Who is proposing the framework amendment?

The South Atlantic Fishery Management Council (Council) is responsible for managing fish stocks in the South Atlantic Region. The Council develops the framework amendment and sends it to the National Marine Fisheries Service (NMFS), who decides whether to approve the framework amendment and publish a rule to implement the framework amendment on behalf of the Secretary of Commerce. NMFS is an agency of the National Oceanic and Atmospheric Administration within the Department of Commerce. Guided by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), the Council works with NMFS, other partners, and stakeholders to assess the status of fish stocks, specify catch limits, reduce bycatch, and ensure compliance with fisheries regulations.

The Council and NMFS are also responsible for making this framework amendment available for public comment. The draft environmental assessment (EA) is combined with the framework amendment and will be made available to the public during the scoping process, public hearings, and in Council meeting briefing books. The final EA and framework amendment will be made available for public comment during the proposed rule stage of the rulemaking process. The final EA and framework amendment will be found on the Council's website at <http://www.safmc.net>.

1.3. Where is the project located?

Management of the federal snapper grouper fishery located off the southeastern United States (South Atlantic) in the 3-200 nautical miles U.S. exclusive economic zone (EEZ) is conducted under the Snapper Grouper FMP (SAFMC 1983) (Figure 1.3.1). Red snapper is one of fifty-five species managed by the Council under the Snapper Grouper FMP.

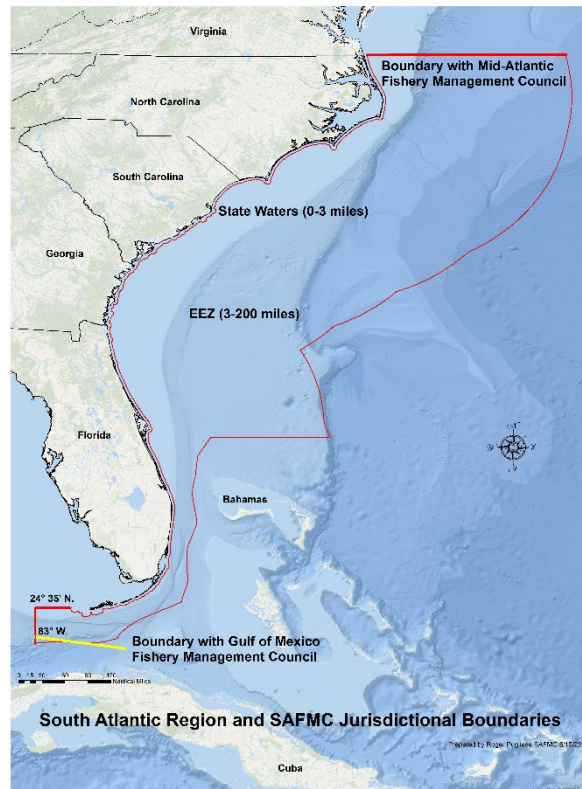


Figure 1.3.1. Jurisdictional boundaries of the Council.

1.4. Why are the Council and NMFS considering action (Purpose and Need Statement)

Purpose: The *purpose* of this framework amendment is to revise the **overfishing limit**, acceptable biological catch and annual catch limits for red snapper in the South Atlantic based on the results of the latest stock assessment; and implement management measures to reduce **dead discards** for the South Atlantic snapper grouper fishery.

Need: The *need* for this framework amendment is to ensure red snapper catch limits are based on the best scientific information available and to **end address** overfishing of the South Atlantic red snapper stock **by reducing dead discards**, while minimizing negative social and economic effects to the extent practicable, consistent with the Magnuson-Stevens Fishery Conservation and Management Act and its National Standards.

Background

The Council is considering action to respond to the most recent stock assessment for South Atlantic red snapper (SEDAR 73 2021). This assessment included data through 2019 and was conducted using the Beaufort Assessment Model, a statistical catch-at age model. The assessment results indicated that South Atlantic red snapper are overfished and experiencing

overfishing (Table 1.4.1). Updated catch and data changes incorporated in the assessment provided information to update the OFL, ABC, and ACLs, and to establish an annual OY.

Table 1.4.1. South Atlantic red snapper stock status criteria recommendations based on the results of SEDAR 73 (2021), as recommended by the Scientific and Statistical Committee in July 2021.

Criteria	Deterministic	Probabilistic
Overfished evaluation (SSB/SSB _{MSY})	0.44	0.49
Overfishing evaluation	2.20	1.95
MFMT (F _{MSY})	0.21	0.21
SSB _{MSY} (mt mature female biomass)	635,426.4	594,630.2
MSST (mt mature female biomass)	476,569.8	445,972.6
MSY (1000 lbs.)	404.7	407.78

The Council’s SSC reviewed results of the assessment at their April and July 2021 meetings and recommended new OFL and ABC levels. The SSC’s recommendations are summarized in Section 1.5 and were presented to the Council at the September 2021 meeting. Council action is needed because the SSC recommended a new, lower ABC, and the Council cannot set the ABC or total ACL above the SSC’s recommended ABC. Therefore, the Council must reduce the ABC, total ACL, and sector ACLs based on SEDAR 73 and the SSC’s recommendation. The Council must also establish an OY based on the results of SEDAR 73, which can be set as an annual OY.

The Council received notification from NMFS (via letter dated July 23, 2021) of the status of the red snapper stock in the South Atlantic. Following notification that a stock is undergoing overfishing and is overfished, the Magnuson-Stevens Act requires the Council to develop an FMP amendment with actions that end overfishing immediately and rebuild the affected stock. Because a rebuilding plan is already in place and SEDAR 73 (2021) shows progress towards rebuilding is being made, the Council does not need to revise the existing rebuilding plan but is still required to take action to end overfishing. Red snapper overfishing is being caused by discard mortality incurred largely when the red snapper season is closed. Therefore, reducing the harvest of red snapper alone (i.e. lowering the ACL) would be expected to have minimal impact toward ending overfishing.

Discard mortality is a pervasive issue that affects much of the South Atlantic snapper grouper management unit. Stock assessments estimate the number of fish that can be sustainably removed from a stock annually. These removals can occur as fish that are harvested or fish that are caught, released, and subsequently die due to the catch and release process (i.e. dead discards). If more fish die after being caught and released, fewer of the removals can be projected as harvested fish. Most management regulations pertain to harvested fish because fishermen have more control over what they retain of what has already been caught rather than what they catch. Projections of management effects for actions that reduce retainment (e.g. lowering ACLs, lowering bag limits, increasing minimum size limits) often estimate similar or higher amounts of removals due to discard mortality (because fewer fish are allowed to be kept, more fish are released and more fish die following release). Therefore, for stocks with high amounts of dead discards (e.g. South Atlantic red snapper), regulatory changes to allowable

harvest (retained fish) have minimal impacts to reducing overall removals and improving stock status. For such stocks, substantial changes to the number of removals must be made by reducing the number of dead discards, either by lowering the discard mortality rate (improving the survival of fish that are released) or by lowering the overall catch (fewer fish released at a given discard mortality rate results in fewer dead discards).

Due to the impacts of discard mortality throughout the multispecies South Atlantic snapper grouper fishery, the Council is taking actions that will affect management of many snapper grouper species to reduce dead discards. These actions, along with expanded outreach and education efforts (see Appendix H) and subsequent actions including the snapper grouper MSE and a future amendment (see Section 1.1), will also contribute to ending overfishing of South Atlantic red snapper.

1.5. Are these actions within the bounds of scientific recommendations?

The Council's SSC provides scientific recommendations on catch levels to the Council, depicted through an OFL and ABC. The OFL is a catch level that corresponds to the stock's maximum sustainable yield (MSY). The ABC is a catch limit adjusted downward from the OFL to account for scientific uncertainty and the Council's risk tolerance policy.

The SSC reviewed the South Atlantic red snapper stock assessment (SEDAR 73 2021) at their April 2021 and July 2021 meetings. The SSC found that the assessment addressed the terms of reference appropriately, was conducted using the best scientific information available, was adequate for determining stock status and supporting fishing level recommendations, and addressed uncertainty consistent with expectations and available information.

The SSC reviewed projections depicting a variety of recruitment, fishing mortality, and discard mortality scenarios. The SSC recommended the OFL be based on results of a projection that included recent (last 10 years) average recruitment, a discard mortality rate that accounts for descending device usage based on current and predicted levels of use, a fishing mortality rate of $F_{30\%}$ (the fishing mortality rate when the spawning potential ratio equals 30%; a proxy for F_{MSY}), and no reallocation of fishing mortality from discards to landings. This projection was run out through 2044 (the last year of the rebuilding plan) to determine if the stock would rebuild within the rebuilding timeframe. The projections indicated the stock would rebuild within the rebuilding timeframe. Recommended landings and projected discard levels are provided for the next 5 years (Table 1.5.1). The SSC additionally recommended that the ABC equal the recommended OFL (i.e. a buffer between the two amounts was not necessary), because the fishing mortality rate used to project OFL ($F_{30\%}$) was below the maximum fishing mortality rate that would rebuild the stock ($F_{rebuild}$).

The current OFL for red snapper is 56,000 fish, and the current ABC is 53,000 fish, based on the SSC's recommendation following the SEDAR 41 stock assessment (2017). The total ACL is 42,510 fish (Amendment 43, SAFMC 2017).

Table 1.5.1 Proposed OFL and ABC levels (the SSC recommended ABC equal OFL) recommended for South Atlantic red snapper by the SSC, based on projections from SEDAR 73 (2021).

Year	ABC/OFL Landings (lbs ww)	ABC/OFL Dead Discards (lbs ww)	ABC/OFL Landings (numbers of fish)	ABC/OFL Dead Discards (numbers of fish)	Percent Reduction in ABC/OFL Landings (numbers of fish) from Current ACL
2023	327,000	1,036,000	28,000	202,000	34.13%
2024	368,000	1,076,000	31,000	207,000	27.08%
2025	408,000	1,104,000	33,000	210,000	22.37%
2026	446,000	1,122,000	35,000	211,000	17.67%
2027+	480,000	1,133,000	36,000	212,000	15.31%

1.6. How were the ACL alternatives determined?

The reauthorization of the Magnuson-Stevens Act in 2007 required implementation of ACLs and accountability measures (AM) to end and/or prevent overfishing to achieve the optimum yield (OY) from a fishery. An ACL is the level of annual catch of a stock that, if met or exceeded, triggers some corrective action. The AMs are the corrective actions, and they are management controls to prevent ACLs from being exceeded and to correct for overages of ACLs if they occur. An example of an AM is implementation of an in-season closure if catch is projected to reach the ACL. This framework amendment includes alternatives that would revise the current ACLs for red snapper.

ACL alternatives (Action 1) were developed based on the SSC’s recommended ABC, with an alternative setting ACL equal to the recommended ABC (**Alternative 2**), and other alternatives with buffers to account for uncertainty associated with regulations restricting harvest to the ACL (**Alternatives 3 and 4**). The Council also requested an alternative that considers an ACL of 0 fish (**Alternative 5**), which would close all harvest of red snapper for both sectors. A full closure of the fishery is considered because of how the recreational season is determined and the projected length of the recreational season. The recreational fishing season length is determined each year based on catch rates in the previous year. Based on recent recreational season lengths and reductions to the ABC, the recreational season length is projected to be 1-2 days. The Council is considering how the biological benefit of closing the fishery to all red snapper harvest compares to the social and economic benefits of a 1-2-day recreational season.

Table 1.6.1. Current and proposed catch limits for South Atlantic red snapper. Total and sector catch limits are in numbers of fish and the commercial ACL is in pounds whole weight (lbs ww).

Catch Limit Type	Current Limit	Proposed in Regulatory Amendment 35 (2023)
Overfishing Limit	56,000 fish	
Acceptable Biological Catch	53,000 fish	
Total Annual Catch Limit	42,510 fish	
Optimum Yield		
Commercial Annual Catch Limit	124,815 lbs ww	
Recreational Annual Catch Limit	29,656 fish	

1.7. What is the management and stock assessment history for red snapper?

The snapper grouper fishery is highly regulated and regulations have been in place for red snapper since the initial development of the Snapper Grouper FMP in 1983. More information of management for all species in the snapper grouper fishery management unit may be found at <https://safmc.net/fishery-management-plans/snapper-grouper/>. Below are amendments to the Snapper Grouper FMP and stock assessments addressing red snapper within the South Atlantic EEZ.

Snapper Grouper FMP (1983)

The FMP included provisions to prevent growth overfishing in thirteen species in the snapper grouper complex and established a procedure for preventing overfishing in other species; established minimum size limits for red snapper, yellowtail snapper, red grouper, Nassau grouper, and black sea bass; established a 4-inch trawl mesh size to achieve a 12-inch total length (TL) minimum size limit for vermilion snapper; and included additional harvest and gear limitations.

Amendment 4 (1991)

Amendment 4 to the Snapper Grouper FMP prohibited the use of various gear, including fish traps, the use of bottom longlines for wreckfish, and powerheads in special management zones off South Carolina; established bag limits and minimum size limits for several species (two fish bag limit for red snapper and 20 inch total length minimum size limit); required permits (commercial and for-hire) and specified data collection regulations; and required that all snapper grouper species possessed in the South Atlantic EEZ must have heads and fins intact through landing.

Amendment 11 (1998)

Amendment 11 amended the Snapper Grouper FMP to make definitions of maximum sustainable yield (MSY), OY, overfishing, and overfished consistent with National Standard Guidelines. Amendment 11 also identified and defined fishing communities, addressed bycatch management measures, and defined the red snapper F_{MSY} proxy as $F_{30\%SPR}$.

Interim Rule for Red Snapper (2009)

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In 2008, the Council received notification (letter dated July 8) that the South Atlantic red snapper stock was undergoing overfishing and was overfished. In March 2009, the Council requested that the NMFS establish interim measures to reduce overfishing and fishing pressure on the red snapper stock. Interim measures to establish a closure of the commercial and recreational fisheries for red snapper in the South Atlantic as requested by the Council became effective on January 4, 2010 (74 FR 63673, 12/04/2009). The interim rule was effective until June 2, 2010, but was extended for an additional 186 days since the Council was developing long-term management measures in Amendment 17A to the Snapper Grouper FMP to end overfishing of red snapper and rebuild the stock.

SEDAR 15 (2009)

The red snapper stock in the South Atlantic was first assessed through the Southeast Data, Assessment, and Review (SEDAR) process in 2009. SEDAR 15 (2009) determined the stock to be overfished and undergoing overfishing. In response to SEDAR 15, the Council implemented a moratorium on the harvest of red snapper through Amendment 17A.

Amendment 17A (2010)

Actions in Amendment 17A (SAFMC 2010) specified a 35-year rebuilding schedule with the rebuilding time period ending in 2044, and included a harvest prohibition for red snapper by setting an ACL of zero, and an area closure for all snapper grouper species. The area closure was 4,827 square miles and extended from southern Georgia to northern Florida where harvest and possession of all snapper grouper species would be prohibited (except when fishing with black sea bass pots or spearfishing gear for species other than red snapper). The red snapper prohibition was effective on January 3, 2011; however, NMFS delayed the effective date of the area closure until June 1, 2011, via an emergency rule, to allow time to review the results of a new red snapper stock assessment (SEDAR 24 2010). Amendment 17A also required the use of non-stainless steel circle hooks when fishing for snapper grouper species with hook-and-line gear and natural baits in the South Atlantic EEZ north of 28 degrees North latitude and specified a fishery-independent monitoring program for red snapper.

SEDAR 24 (2010)

Another stock assessment (SEDAR 24) was conducted in 2010, which found the stock to be overfished and undergoing overfishing; however, the rate of overfishing found in SEDAR 24 was less than the rate of overfishing found in the previous stock assessment. Based on the results from SEDAR 24, evidence of decreased effort in the recreational sector, and recommendations from their SSC, the Council determined that the snapper grouper area closure approved in Amendment 17A, in addition to the harvest prohibition, was more conservative than what was necessary to end overfishing of red snapper. In 2013, a method to annually evaluate whether a limited red snapper season could occur, based on red snapper removals in the previous year relative to the ABC, was developed and implemented through Amendment 28 to the Snapper Grouper FMP (SAFMC 2013).

Comprehensive ACL Amendment (Amendment 25) (2011)

The Comprehensive ACL Amendment established sector allocations for many snapper grouper species, including red snapper, using an allocation formula based on historic and recent average

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landings. The commercial allocation for red snapper was set at 28.07% and the recreational allocation was set at 71.93%.

Regulatory Amendment 10 (2011)

In December 2010, the Council approved Regulatory Amendment 10 for review by the Secretary of Commerce by a unanimous vote. The action in Regulatory Amendment 10 eliminated the snapper grouper area closure to reduce discard mortality of red snapper that was approved in Amendment 17A. Regulatory Amendment 10 was implemented and became effective on May 31, 2011.

Emergency Rule (2012)

The rule established red snapper seasons and ACLs for the commercial and recreational sectors in the South Atlantic EEZ in 2012.

Amendment 28 (2013) ([78 FR 44461](#), July 24, 2013)

The amendment set the commercial and recreational ACLs and seasons to allow limited harvest of red snapper in 2013. In addition, the amendment established a process to determine whether limited commercial and recreational fishing seasons in the South Atlantic EEZ could occur during a given fishing year if total removals (landings plus dead discards) were less than the acceptable biological catch in the previous fishing year. Additionally, the Council decided that if limited fishing seasons can occur, the commercial fishing season should begin on the second Monday in July, and the recreational fishing season, which would consist of weekends only (Fridays, Saturdays, and Sundays) on the second Friday in July. If the fishing seasons do not open exactly on these dates, they would open as close to these dates as possible. The Council also decided that if the projected commercial or recreational fishing season is determined by NMFS to be 3 days or less, then the commercial or recreational fishing season would not open for that fishing year.

Note:

Using the process established through Amendment 28, limited harvest of red snapper was allowed in 2012, 2013, and 2014. However, because the estimated total removals of red snapper exceeded the ABC in 2014 and 2015 (due to estimates of red snapper discards that were incidentally harvested as bycatch while targeting other species), there was no allowable harvest in 2015 and 2016.

Regulatory Amendment 21 (2014)

The amendment changed the Minimum Stock Size Threshold (MSST) definition for eight snapper grouper species including red snapper from $MSST = [(1-M) \text{ or } 0.5 \text{ whichever is greater}] * B_{MSY}$ to $0.75 * B_{MSY}$.

SEDAR 41 (2017)

The South Atlantic red snapper stock was assessed again through SEDAR 41 (2017) and found to still be overfished and undergoing overfishing.

Emergency Rule (2017) ([82 FR 50839](#), November 2, 2017)

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NMFS allowed limited commercial and recreational harvest of red snapper in 2017 by a temporary rule through emergency action pursuant to the Magnuson-Stevens Act as a result of new scientific information regarding improvements in the red snapper stock. The rule changed the process used to set the ACL, and also announced the opening and closing dates of the 2017 recreational fishing season and the opening date for the 2017 commercial fishing season for red snapper.

Amendment 43 (2017) ([83 FR 35428](#), July 26, 2018)

Through Amendment 43, the Council changed the process for annually determining whether a season would occur based on landings relative to the ABC that was developed in Amendment 28. In Amendment 43, the Council determined that a limited harvest of red snapper would be allowed by implementing a total ACL of 42,510 fish, based on the landings observed during the limited red snapper season in 2014. That ACL was less than the Council's SSC total ABC recommendation of 53,000 red snapper. Under the total ACL specified in Amendment 43, and based upon the Council's sector allocation (28.07% commercial and 71.93% recreational), the commercial ACL equals 124,815 pounds whole weight and the recreational ACL equals 29,656 fish. On an annual basis, NMFS allows for the harvest of red snapper in South Atlantic Federal waters and determines the length of the recreational fishing season based on these catch levels and catch rates from the previous year. Additionally, the amendment provided notice of the red snapper commercial season opening date and the opening and closing dates for the recreational season in the South Atlantic for the 2018 fishing year.

Regulatory Amendment 33 (2020) ([85 FR 64978](#), October 14, 2020)

The framework amendment removed the requirement that if projections indicate the South Atlantic red snapper season (commercial or recreational) would be three days or fewer, the commercial and/or recreational seasons would not open for that fishing year. As the requirement was removed, red snapper harvest could be open for either recreational or commercial harvest for fewer than four days.

Chapter 2. Proposed Actions and Alternatives

2.1. Action 1. Reduce the acceptable biological catch, total annual catch limit, and sector annual catch limits, and establish an annual optimum yield for South Atlantic red snapper

Alternative 1 (No Action). The current acceptable biological catch for South Atlantic red snapper is 53,000 fish. The total annual catch limit is 42,510 fish. The commercial sector annual catch limit is 124,815 pounds whole weight. The recreational sector annual catch limit is 29,656 fish. Red snapper may only be harvested or possessed in or from the South Atlantic Exclusive Economic Zone during the commercial and recreational fishing seasons.

Alternative 2. Reduce the red snapper acceptable biological catch and set it equal to the most recent recommendation from the Scientific and Statistical Committee. Revise the total annual catch limit and establish an annual optimum yield for red snapper and set them **equal to** the recommended acceptable biological catch. Red snapper may only be harvested or possessed in or from the South Atlantic Exclusive Economic Zone during the commercial and recreational fishing seasons. The 2027 total annual catch limit and annual optimum yield would remain in place until modified.

Fishing Year	ABC (numbers of fish)	Annual OY=Total ACL (numbers of fish)	Commercial ACL (lbs ww)	Recreational ACL (numbers of fish)
2023	28,000	28,000	77,016	19,119
2024	31,000	31,000	85,268	22,119
2025	33,000	33,000	90,769	24,119
2026	35,000	35,000	96,270	26,119
2027+	36,000	36,000	99,021	27,119

Alternative 3. Reduce the red snapper acceptable biological catch and set it equal to the most recent recommendation from the Scientific and Statistical Committee. Revise the total annual catch limit and establish an annual optimum yield for red snapper and set them equal to **95%** of the recommended acceptable biological catch. Red snapper may only be harvested or possessed in or from the South Atlantic Exclusive Economic Zone during the commercial and recreational fishing seasons. The 2027 total annual catch limit and annual optimum yield would remain in place until modified.

Fishing Year	ABC (numbers of fish)	Annual OY=Total ACL (numbers of fish)	Commercial ACL (lbs ww)	Recreational ACL (numbers of fish)
2023	28,000	26,600	73,166	17,719
2024	31,000	29,450	81,005	20,569
2025	33,000	31,350	86,231	22,469
2026	35,000	33,250	91,457	24,369
2027+	36,000	34,200	94,070	25,319

Alternative 4. Reduce the red snapper acceptable biological catch and set it equal to the most recent recommendation from the Scientific and Statistical Committee. Revise the total annual catch limit and establish an annual optimum yield for red snapper and set them equal to **90%** of the recommended acceptable biological catch. Red snapper may only be harvested or possessed in or from the South Atlantic Exclusive Economic Zone during the commercial and recreational fishing seasons. The 2027 total annual catch limit and annual optimum yield would remain in place until modified.

Fishing Year	ABC (numbers of fish)	Annual OY=Total ACL (numbers of fish)	Commercial ACL (lbs ww)	Recreational ACL (numbers of fish)
2023	28,000	25,200	69,315	16,319
2024	31,000	27,900	76,741	19,019
2025	33,000	29,700	81,692	20,819
2026	35,000	31,500	86,643	22,619
2027+	36,000	32,400	89,119	23,519

Alternative 5. Reduce the red snapper acceptable biological catch and set it equal to the most recent recommendation from the Scientific and Statistical Committee. Revise the total annual catch limit and establish an annual optimum yield for red snapper and set them equal to **0 fish**. Red snapper may not be harvested or possessed in or from the South Atlantic Exclusive Economic Zone. These restrictions also apply in the South Atlantic on board a vessel for which a valid Federal commercial or charter vessel/headboat permit for South Atlantic snapper grouper has been issued, regardless of where the fish has been harvested.

Fishing Year	ABC (numbers of fish)	Annual OY=Total ACL (numbers of fish)	Commercial ACL (lbs ww)	Recreational ACL (numbers of fish)
2023	28,000	0	0	0
2024	31,000	0	0	0
2025	33,000	0	0	0
2026	35,000	0	0	0
2027+	36,000	0	0	0

Discussion

In accordance with the Allocation Trigger Policy (Appendix H), the Council discussed sector allocations for red snapper at their June 2022 meeting and noted that they do not feel the need to consider changes to allocations at this time because, unlike many other species, the primary recreational data source used in SEDAR 73 was the Florida State Reef Fish Survey, and that survey was not changed by the Marine Recreational Information Program’s (MRIP) transition from the Coastal Household Telephone Survey to the mail-based Fishing Effort Survey in 2018. The commercial allocation is 28.07% of the total ACL, and the recreational allocation is 71.93% of the total ACL. The Council determined that this existing allocation remains fair and equitable, reasonably calculated to promote conservation, and does not allow any entity to acquire an excessive share of fishing privileges. In addition, since the Council intends to consider more holistic management changes to the snapper grouper fishery in a future amendment, the Council may review sector allocations at that time if the Council decides it is necessary.

The current annual catch limit (ACL) and sector allocations for red snapper were implemented in Amendment 43 to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC, 2017). Under Alternative 1 (No Action) in Regulatory Amendment 35, the total ACL is 42,510 fish, which was based on the landings observed during the limited red snapper season in 2014, as implemented through Amendment 43. Of that total ACL, the commercial ACL is 124,815 pounds whole weight (lbs ww) and the recreational ACL is 29,656 fish. To calculate the commercial ACL, the total ACL in numbers of fish was converted to weight using the projected average weight of fish caught by both sectors in 2018 (10.46 lbs ww) from SEDAR 41 (2017). To calculate the recreational ACL, the commercial ACL in lbs ww was converted to numbers of fish using the average weight of commercially caught red snapper from 2012 to 2014 (9.71 lbs ww) (SEDAR 41, 2017). The recreational ACL is the difference between the total ACL in numbers of fish and the commercial ACL in numbers of fish. This method was determined to be necessary to ensure that rounding did not result in the sum of the sector ACLs (numbers of fish) exceeding the total ACL (numbers of fish).

The same method as Amendment 43 was used to allocate sector ACLs from the total ACLs considered in Action 1, except the total average weight and commercial average weight were updated to be based on the SEDAR 73 (2021) stock assessment. The updated total average weight, calculated as the average of estimated annual average weights of fish landed from 2017-

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2019, is 9.80 lbs ww. The updated commercial average weight, calculated as the average of estimated annual average weights of fish commercially landed from 2017-2019, is 8.67 lbs ww. These average weights were applied as described above to determine the sector ACLs associated with **Alternatives 2** through **5**.

2.1.1. Comparison of Alternatives:

2.2. Action 2. Prohibit the use of electrically or hydraulically-powered reels to fish recreationally for snapper grouper species

Alternative 1 (No Action). There is no prohibition on the use of electrically or hydraulically powered reels by the recreational sector to fish for snapper grouper species in the South Atlantic exclusive economic zone.

Alternative 2. Prohibit the use of electrically or hydraulically-powered reels by the recreational sector to fish for snapper grouper species, in the South Atlantic exclusive economic zone.

THE COUNCIL DIRECTED EXPLORATION OF ADDITIONAL ALTERNATIVES WITH CONSIDERATION OF REGULATIONS BEING SPECIFIC TO AREAS BASED ON GEOGRAPHY, DEPTH, AND SPECIES/CATCH DISTRIBUTIONS. THE FOLLOWING DRAFT ALTERNATIVES AND SUB-ALTERNATIVES WERE DEVELOPED BY THE IPT. FURTHER DIRECTION ON WHICH ALTERNATIVES AND SUB-ALTERNATIVES SHOULD BE INCLUDED IN ACTION 2 IS NEEDED.

Draft alternatives and sub-alternatives

DRAFT Alternative 3. Prohibit the use of electrically or hydraulically-powered reels by the recreational sector to fish for snapper grouper species in the South Atlantic Exclusive Economic Zone off:

Sub-Alternative 3a. North Carolina

Sub-Alternative 3b. South Carolina

Sub-Alternative 3c. Georgia

Sub-Alternative 3d. North Florida (counties include Nassau, Duval, Saint Johns, Flagler, Volusia)

Sub-Alternative 3e. Central Florida (counties include Brevard, Indian River, St Lucie)

Sub-Alternative 3f. South Florida (counties include Martin, Palm Beach, Broward, Miami-Dade, Monroe)

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DRAFT Alternative 4. Prohibit the use of electrically or hydraulically-powered reels by the recreational sector while fishing for snapper grouper species in the South Atlantic Exclusive Economic Zone in an area associated with the following depths:

- Sub-Alternative 4a.** Less than 100 feet
- Sub-Alternative 4b.** 100 feet to 200 feet
- Sub-Alternative 4c.** 200 feet to 300 feet
- Sub-Alternative 4d.** Greater than 300 feet

**ADDITIONAL SUB-ALTERNATIVE DERIVED FROM AP
RECOMMENDATION ON ACTION 3:
Sub-Alternative 4e.** Greater than 150 feet

Discussion

- Objectives:
 1. Reduce recreational dead discards for the snapper grouper fishery.
 - a. Electrically or hydraulically-powered reels reduce the time required to land a caught fish.
 - b. Prohibiting electrically or hydraulically-powered reels is expected to increase the average time required to reel and catch a fish, resulting in fewer fish caught per trip and overall.
 - c. Fewer fish caught results in fewer discards.
 - d. Discard mortality rates applied to a smaller number of discards results in fewer dead discards.
 2. Contribute to ending overfishing of red snapper.
 - a. Recreational dead discards are the primary result of fishing mortality for red snapper. Reducing the fishing mortality rate throughout the snapper grouper fishery by prohibiting electrically or hydraulically-powered reels for the recreational sector will also reduce dead discards and the fishing mortality rate of red snapper.
- For **Draft Alternatives 3 and 4**, if included, waypoints defining regulatory area boundaries would need to be developed.
 - **Alternative 4** language would be updated to reflect waypoints rather than enforcing by depth.
- Different regulations in different areas can create enforcement difficulties. More different areas, more difficulty (e.g., different regulations in different parts of Florida would increase enforcement difficulty).
 - The IPT will develop discussion of stowing provisions detailing how electrically and hydraulically-powered reels are required to be stowed while fishing for snapper-grouper species.
- Species distributions
 - Different levels of impact are expected among snapper grouper stocks based on differences in species spatial distributions, depth distributions, rates of recreational releasing (when a fish is caught, how often is it released rather than retained?), and discard mortality rates.

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2.2.1. Comparison of Alternatives:

2.3. Action 3. Prohibit the use of more than one hook per line for the snapper grouper recreational sector

Alternative 1 (No Action). There is no prohibition on the use of more than one hook per line by the recreational sector to fish for snapper grouper species in the South Atlantic exclusive economic zone.

Alternative 2. Prohibit the use of more than one hook per line for the recreational sector to fish for snapper grouper species in the South Atlantic exclusive economic zone.

THE COUNCIL DIRECTED EXPLORATION OF ADDITIONAL ALTERNATIVES WITH CONSIDERATION OF REGULATIONS BEING SPECIFIC TO AREAS BASED ON GEOGRAPHY, DEPTH, AND SPECIES/CATCH DISTRIBUTIONS. THE FOLLOWING DRAFT ALTERNATIVES AND SUB-ALTERNATIVES WERE DEVELOPED BY THE IPT. FURTHER DIRECTION ON WHICH ALTERNATIVES AND SUB-ALTERNATIVES SHOULD BE INCLUDED IN ACTION 3 IS NEEDED.

Draft alternatives and sub-alternatives

DRAFT Alternative 3. Prohibit the use of more than one hook per line for the recreational sector to fish for snapper grouper species in the South Atlantic Exclusive Economic Zone off:

Sub-Alternative 3a. North Carolina

Sub-Alternative 3b. South Carolina

Sub-Alternative 3c. Georgia

Sub-Alternative 3d. North Florida (counties include Nassau, Duval, Saint Johns, Flagler, Volusia)

Sub-Alternative 3e. Central Florida (counties include Brevard, Indian River, St Lucie)

Sub-Alternative 3f. South Florida (counties include Martin, Palm Beach, Broward, Miami-Dade, Monroe)

DRAFT Alternative 4. Prohibit the use of more than one hook per line for the recreational sector to fish for snapper grouper species in the South Atlantic Exclusive Economic Zone in an area associated with depth:

Sub-Alternative 4a. Less than 100 feet

Sub-Alternative 4b. 100 feet to 200 feet

Sub-Alternative 4c. 200 feet to 300 feet

Sub-Alternative 4d. Greater than 300 feet

ADDITIONAL SUB-ALTERNATIVE DERIVED FROM AP RECOMMENDATION:

Sub-Alternative 4e. Greater than 150 feet

Discussion

- Objectives:
 1. Reduce recreational dead discards for the snapper grouper fishery.

- a. More hooks per line increases the likelihood of catching a fish and potentially the number of fish caught per drop.
 - b. Prohibiting the use of more than one hook per line is expected to reduce the number of fish caught per drop, resulting in fewer fish caught per trip and overall.
 - c. Fewer fish caught results in fewer discards.
 - d. Discard mortality rates applied to a smaller number of discards results in fewer dead discards.
2. Contribute to ending overfishing of red snapper.
- a. Recreational dead discards are the primary result of fishing mortality for red snapper. In reducing dead discards throughout the snapper grouper fishery by limiting the number of hooks that may be used by the recreational fishery, dead discards of red snapper and the fishing mortality rate for red snapper will be reduced.
- For **Draft Alternatives 3** and **4**, if included, waypoints defining regulatory area boundaries would need to be developed.
 - **Alternative 4** language would be updated to reflect waypoints rather than enforcing by depth.
 - Different regulations in different areas can create enforcement difficulties. More different areas, more difficulty.
 - Species distributions
 - Different levels of impact are expected among snapper grouper stocks based on differences in species spatial distributions, depth distributions, rates of recreational releasing (when a fish is caught, how often is it released rather than retained?), and discard mortality rates.
 - Council staff is collecting data to compare catch rates between single hook and double hook rigs. Data from these collections will be combined with previously collected data from Florida FWC to characterize efficiency differences between single and double-hook rigs.
 - SSC reviewed preliminary results at their October 2022 meeting.

2.3.1. Comparison of Alternatives:

Chapter 3. Affected Environment

This section describes the affected environment in the proposed project area. The affected environment is divided into four major components:

- **Habitat Environment** (Section 3.1)
- **Biological and Ecological Environment** (Section 3.2)
- **Economic Environment** (Section 3.3)
- **Social Environment** (Section 3.4)
- **Administrative Environment** (Section 3.5)

3.1. Habitat Environment

Information on the habitat utilized by species in the snapper grouper fishery management unit (Snapper Grouper FMU) and managed through the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region is included in Volume II of the Fishery Ecosystem Plan (FEP; SAFMC 2009) and the FEP II Dashboard (under revision) which are incorporated here by reference. South Atlantic Fishery Management Council (Council) designated essential fish habitat (EFH) and EFH-Habitat Areas of Particular Concern (EFH-HAPC) are presented in the [SAFMC User Guide](#). Web Services and spatial representations of EFH and other habitat related layers are accessible through the Council's [SAFMC Atlas](#), a platform for searching and visualizing GIS data relevant to the Council's mission and download of GIS layers and information on regional partners is available through the [SAFMC Digital Dashboard](#).

3.1.1. Inshore/Estuarine Habitat

Many snapper grouper species utilize both pelagic and benthic habitats during several stages of their life histories; larval stages of these species live in the water column and feed on plankton. Most juveniles and adults are demersal (bottom dwellers) and associate with hard structures on the continental shelf that have moderate to high relief (e.g., coral reef systems and artificial reef structures, rocky hard-bottom substrates, ledges and caves, sloping soft-bottom areas, and limestone outcroppings). Juvenile stages of some snapper grouper species also utilize inshore seagrass beds, mangrove estuaries, lagoons, oyster reefs, and embayment systems. In many species, various combinations of these habitats may be utilized during daytime feeding migrations or seasonal shifts in cross-shelf distributions. Additional information on the habitat

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utilized by species in the Snapper Grouper Complex is included in Volume II of the Fishery Ecosystem Plan¹ (FEP; SAFMC 2009) and incorporated here by reference. The life history of red snapper is summarized in Section 3.2.1.

3.1.2. Offshore Habitat

Predominant snapper grouper offshore fishing areas are located in live bottom and shelf-edge habitats where water temperatures range from 11° to 27° C (52° to 81° F) due to the proximity of the Gulf Stream, with lower shelf habitat temperatures varying from 11° to 14° C (52° to 57° F). Water depths range from 16 to 55 meters (54 to 180 ft) or greater for live-bottom habitats, 55 to 110 meters (180 to 360 ft) for the shelf-edge habitat, and from 110 to 183 meters (360 to 600 ft) for lower-shelf habitat areas.

The exact extent and distribution of productive snapper grouper habitat in South Atlantic continental shelf habitats is unknown. Current data suggest from 3% to 30% of the shelf is suitable habitat for these species. These live-bottom habitats may include low relief areas, supporting sparse to moderate growth of sessile (permanently attached) invertebrates, moderate relief reefs from 0.5 to 2 meters (1.6 to 6.6 ft), or high relief ridges at or near the shelf break consisting of outcrops of rock that are heavily encrusted with sessile invertebrates such as sponges and sea fan species. Live-bottom habitat is scattered irregularly over most of the shelf north of Cape Canaveral but is most abundant offshore from northeastern Florida. South of Cape Canaveral the continental shelf narrows from 56 to 16 kilometers (35 to 10 mi) wide off the southeast coast of Florida and the Florida Keys. The lack of a large shelf area, presence of extensive, rugged living fossil coral reefs, and dominance of a tropical Caribbean fauna are distinctive benthic characteristics of this area.

Rock outcroppings occur throughout the continental shelf from Cape Hatteras, North Carolina to Key West, Florida (MacIntyre and Milliman 1970; Miller and Richards 1979; Parker et al. 1983), which are principally composed of limestone and carbonate sandstone (Newton et al. 1971), and exhibit vertical relief ranging from less than 0.5 to over 10 meters (33 ft). Ledge systems formed by rock outcrops and piles of irregularly sized boulders are also common. Parker et al. (1983) estimated that 24% (9,443 km²) of the area between the 27 and 101 meter (89 and 331 ft) depth contours from Cape Hatteras, North Carolina to Cape Canaveral, Florida is reef habitat. Although the bottom communities found in water depths between 100 and 300 meters (328 and 984 ft) from Cape Hatteras, North Carolina to Key West, Florida is relatively small compared to the whole shelf, this area, based upon landing information of fishers, constitutes prime reef fish habitat and probably significantly contributes to the total amount of reef habitat in this region.

Artificial reef structures are also utilized to attract fish and increase fish harvests; however, research on artificial reefs is limited and opinions differ as to whether or not these structures promote an increase of ecological biomass or merely concentrate fishes by attracting them from nearby, natural un-vegetated areas of little or no relief. There are several notable shipwrecks along the southeast coast in state and federal waters including *Lofthus* (eastern Florida), *SS Copenhagen* (southeast Florida), *Half Moon* (southeast Florida), *Hebe* (Myrtle Beach, South

¹ <http://safmc.net/ecosystem-management/fishery-ecosystem-plan/>

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Carolina), *Georgiana* (Charleston, South Carolina), *U.S.S. Monitor* (Cape Hatteras, North Carolina), *Huron* (Nags Head, North Carolina), and *Metropolis* (Corolla, North Carolina).

The distribution of coral and live hard bottom habitat as presented in the Southeast Marine Assessment and Prediction Program (SEAMAP) bottom mapping project is a proxy for the distribution of the species within the snapper grouper complex. Maps are available on the South Atlantic Council's Habitat and Ecosystem Atlas².

Plots of the spatial distribution of offshore species were generated from the Marine Resources Monitoring, Assessment, and Prediction Program (MARMAP) data. The plots serve as point confirmation of the presence of each species within the scope of the sampling program. These plots, in combination with the hard bottom habitat distributions previously mentioned, can be employed as proxies for offshore snapper grouper complex distributions in the South Atlantic region. Maps of the distribution of snapper grouper species by gear type based on MARMAP data can also be generated through the Council's Internet Mapping System at the above address.

Additional information on the habitat utilized by snapper grouper species is included in Volume II of the Fishery Ecosystem Plan (FEP; SAFMC 2009).

3.1.3. Essential Fish Habitat

Essential Fish Habitat (EFH) is defined in the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act as "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S. C. 1802(10)). Specific categories of EFH identified in the South Atlantic Bight, which are utilized by federally managed fish and invertebrate species, include both estuarine/inshore and marine/offshore areas. Specifically, estuarine/inshore EFH includes: estuarine emergent and mangrove wetlands, submerged aquatic vegetation, oyster reefs and shell banks, intertidal flats, palustrine emergent and forested systems, aquatic beds, and estuarine water column. Additionally, marine/offshore EFH includes: live/hard bottom habitats, coral and coral reefs, artificial and manmade reefs, *Sargassum* species, and marine water column.

EFH utilized by snapper grouper species in this region includes coral reefs, live/hard bottom, submerged aquatic vegetation, artificial reefs, and medium to high profile outcroppings on and around the shelf break zone from shore to at least 183 meters [600 ft (but to at least 2,000 ft for wreckfish)] where the annual water temperature range is sufficiently warm to maintain adult populations of members of this largely tropical fish complex. EFH includes the spawning area in the water column above the adult habitat and the additional pelagic environment, including *Sargassum*, required for survival of larvae and growth up to and including settlement. In addition, the Gulf Stream is also EFH because it provides a mechanism to disperse snapper grouper larvae.

For specific life stages of estuarine-dependent and near shore snapper grouper species, EFH includes areas inshore of the 30 meter (100-ft) contour, such as attached macroalgae; submerged rooted vascular plants (seagrasses); estuarine emergent vegetated wetlands (saltmarshes, brackish

² http://ocean.floridamarine.org/safmc_atlas/

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marsh); tidal creeks; estuarine scrub/shrub (mangrove fringe); oyster reefs and shell banks; unconsolidated bottom (soft sediments); artificial reefs; and coral reefs and live/hard bottom habitats.

3.1.4. Habitat Areas of Particular Concern

EFH-HAPC for species in the Snapper Grouper FMU in the Atlantic include medium to high profile offshore hard bottoms where spawning normally occurs; localities of known or likely periodic spawning aggregations; near shore hard bottom areas; The Point, The Ten Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump (South Carolina); mangrove habitat; seagrass habitat; oyster/shell habitat; all coastal inlets; all state-designated nursery habitats of particular importance to snapper grouper (e.g., primary and secondary nursery areas designated in North Carolina); pelagic and benthic *Sargassum*; Hoyt Hills for wreckfish; the Oculina Bank HAPC; all hermatypic coral habitats and reefs; manganese outcroppings on the Blake Plateau; Council-designated artificial reef special management zones; and deep-water marine protected areas. Areas that meet the criteria for EFH-HAPCs include habitats required during each life stage (including egg, larval, post-larval, juvenile, and adult stages).

The Council established the special management zone (SMZ) designation process in 1983 in the Snapper Grouper FMP, and SMZs have been designated in federal waters off North Carolina, South Carolina, Georgia, and Florida since that time. The purpose of the original SMZ designation process, and the subsequent specification of SMZs, was to protect snapper grouper populations at the relatively small, permitted artificial reef sites and “create fishing opportunities that would not otherwise exist.” Thus, the SMZ designation process was centered around protecting the relatively small habitats, which are known to attract desirable snapper grouper species.

Similarly, in the Comprehensive Ecosystem-Based Amendment 1 (CE-BA1; SAFMC 2010), the Council has designated EFH areas and EFH-HAPCs under the Snapper Grouper FMP. Under the Magnuson-Stevens Act, FMPs are required to describe and identify EFH and to minimize the adverse effects of fishing on such habitat to the extent practicable. An EFH-HAPC designation adds an additional layer to the EFH designation. Under the Snapper Grouper FMP, EFH-HAPCs are designated based upon ecological importance, susceptibility to human-induced environmental degradation, susceptibility to stress from development, or rarity of habitat type. The Council determined in CE-BA 1 that the Council-designated SMZs met the criteria to be EFH-HAPCs for species included in the Snapper Grouper FMP. Since CE-BA 1, the Council has designated additional SMZs in the Snapper Grouper FMP. The SMZ and EFH-HAPC designations serve similar purposes in pursuit of identifying and protecting valuable and unique habitat for the benefit of fish populations, which are important to both fish and fishers. Therefore, the Council has determined that a designated SMZ meets the criteria for an EFH-HAPC designation, and the Council intends that all SMZs designated under the Snapper Grouper FMP are also designated as EFH-HAPCs under the Snapper Grouper FMP.

The potential impacts the actions in this amendment may have on EFH and EFH-HAPCs are discussed in Chapter 4 of this document.

3.2. Biological and Ecological Environment

The waters off the South Atlantic coast are home to a diverse population of fish. The fishery management unit (FMU) contains 55 species of fish, many of them neither “snappers” nor “groupers.” These species live in depths from a few feet (typically as juveniles) to hundreds of feet. As far as north/south distribution, the more temperate species tend to live in the upper reaches of the South Atlantic management area (e.g., black sea bass, red porgy) while the tropical variety’s core residence is in the waters off south Florida, Caribbean Islands, and northern South America (e.g., black grouper, mutton snapper). These are reef-dwelling species that live amongst each other. These species rely on the reef environment for protection and food. There are several reef tracts that follow the southeastern coast. The fact that these fish populations congregate dictates the nature of the fishery (multi-species) and further forms the type of management regulations proposed in this document.

3.2.1. Red snapper, *Lutjanus campechanus*

3.2.1.1. Life History

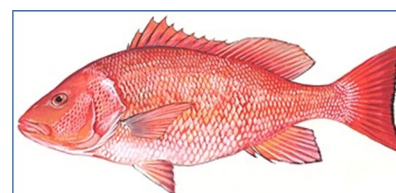
The red snapper is found from North Carolina to the Florida Keys and throughout the Gulf of Mexico to the Yucatan Peninsula (Robins and Ray 1986), in depths from 10 to 190 m (33-623 ft). Adults usually occur over rocky bottoms. Juveniles inhabit shallow waters and are common over sandy or muddy bottom habitat (Allen 1985).

Juvenile (Age 0) red snapper are rarely encountered in the U.S. South Atlantic. SEAMAPs fishery-independent trawling survey collected three in 1999, two in 2000, seven in 2013, and four in 2014 in nearshore (<30 ft deep) habitat. A headboat fisherman landed one age-0 red snapper during the 2012 mini-season. One age-0 fish was landed in the commercial fishery in 1980. Fishermen have reported observing juvenile red snapper on artificial reefs in shallow water. Estimates of juvenile red snapper mortality have been developed in the Gulf of Mexico; however, little information is available for the U.S. South Atlantic (SEDAR 41 2017).

The maximum size reported for this species is 100 cm (40 in) total length (TL) (Allen 1985; Robins and Ray 1986) and 22.8 kg (50 lbs) (Allen 1985). For samples collected from North Carolina to eastern Florida, maximum reported age is 45 years (White and Palmer 2004). The most recent maximum observed age for red snapper is 51 years. This fish was a 904 mm (36 in) TL female, and was caught in 2003 at 67 meters depth off Florida by a charter boat fisherman (SEDAR 41 2017).

In the U.S. South Atlantic, recent analyses (SEDAR 41 2017) estimate that 50% of female red

Red snapper Life History *An Overview*



- Extend from North Carolina to the Florida Keys, and throughout the Gulf of Mexico to the Yucatan Peninsula
- Waters ranging from 33-623 feet
- Red snapper do not migrate but can move long distances
- The spawning season extends from May to October, peaking in July through September.
- Can live for at least 51 years

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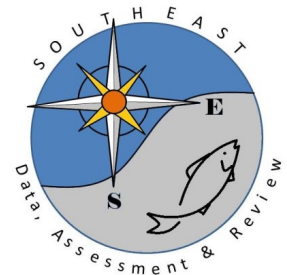
snapper are mature at 1.3 years old and 325 mm (12.8 in) TL. Fifty percent of male red snapper are mature at 166 mm (6.5 in) TL (SEDAR 41 2017). Grimes (1987) found that the spawning season of this species varies with location, but in most cases occurs nearly year round. Farmer et al. (2017 and references therein) report spawning activity in the South Atlantic occurring from May through October peaking in June through September. According to SEDAR 41 (2017) spawning along the Atlantic coast of the southeastern U.S. generally occurs from April through October and peaks during June through August based on the presence of females with spawning indicators (i.e., the occurrence of hydrated oocytes and/or postovulatory follicles).

Red snapper eat fishes, shrimps, crabs, worms, cephalopods, and some planktonic items (Szedlemayer and Lee 2004).

3.2.1.2. Stock Status

Southeast Data, Assessment, and Review (SEDAR) Process

The SEDAR process is a cooperative Fishery Management Council initiative to improve the quality and reliability of fishery stock assessments in the South Atlantic, Gulf of Mexico, and U.S. Caribbean. The Caribbean, Gulf of Mexico, and South Atlantic Fishery Management Councils manage SEDAR in coordination with the NMFS and the Atlantic and Gulf States Marine Fisheries Commissions. SEDAR seeks improvements in the scientific quality of stock assessments, constituent and stakeholder participation in assessment development, transparency in the assessment process, and a rigorous and independent scientific review of completed stock assessments.



SEDAR is organized around three workshops. First is the Data Workshop, during which fisheries monitoring and life history data are reviewed and compiled. Second is the Assessment Workshop, which may be conducted via a workshop and several webinars, during which assessment models are developed and population parameters are estimated using the information provided from the Data Workshop. Third and final is the Review Workshop, during which independent experts review the input data, assessment methods, and assessment products. The completed assessment, including the reports of all three workshops and all supporting documentation, are then forwarded to the Council's Scientific and Statistical Committee (SSC). The SSC considers whether the assessment represents the best available science and develops fishing level recommendations for Council consideration.

SEDAR workshops are public meetings organized by SEDAR. Workshop participants appointed by the lead Council are drawn from state and federal agencies, non-government organizations, Council members, Council advisors, and the fishing industry with a goal of including a broad range of disciplines and perspectives. All participants are expected to contribute to this scientific process by preparing working papers, contributing data, providing assessment analyses, evaluating and discussing information presented, and completing the workshop report.

Manooch et al. (1998) conducted the first formal assessment of red snapper in the South Atlantic. The authors concluded that the status of the stock was not ideal but seemed to be responding to management action. Potts and Brennan (2001) revisited the results of that assessment and suggested a broader range of reduction in fishing mortality (F), from 30% to 80%.

South Atlantic Red Snapper Stock Assessments

The red snapper stock in the South Atlantic was assessed through the SEDAR process in 2007-2008. That assessment applied a statistical catch-age model using data through 2006 (SEDAR 15 2009). The assessment found that overfishing had been occurring since the 1960s and the red snapper stock was overfished. Although quantitative results varied, the qualitative results of overfishing a depleted stock were consistent across all catch-age model configurations examined during and after the assessment process (approximately 40 sensitivity runs), as well as with an alternative model formulation (surplus-production model).

In 2010, a benchmark assessment using the Beaufort Assessment Model (BAM) with data through 2009 was completed (SEDAR 24 2010). BAM is a statistical catch-age model developed by the analysts at the Beaufort, North Carolina, NMFS SEFSC laboratory, and is customizable to the data available. A surplus production model called ASPIC (Prager 1994; Prager 2004) was used as a complement for comparison purposes. Based on the assessment provided from the BAM, the SEDAR Review Panel concluded that the red snapper stock was overfished and overfishing was occurring. Similar to SEDAR 15 (2009), more than 40 sensitivities were run, all of which resulted in the same status determinations.

A benchmark assessment was completed in 2016 (SEDAR 41 2017) with data through 2014. Although the SEDAR Review Panel concluded that assessment results represent the best scientific information available, the Panel identified several areas of uncertainty including the composition and magnitude of recreational discards, the stock-recruitment relationship, potential changes in CPUE catchability, and the selectivities for the different fishery fleets. The SSC reviewed the assessment and provided fishing level recommendations at their May 2016 meeting based on $F_{30\%SPR}$ as a proxy for F_{MSY} . The base assessment run suggested that in the terminal year of 2014 the stock remained overfished. The SSC did not have confidence in the terminal fishing mortality estimates; however, they recommended that the assessment results suggested overfishing was likely occurring in the terminal years of the assessment (2012-2014) although the degree to which overfishing was occurring at that time could not be reliably quantified from the assessment results (see May 2016 Final SSC report).

SEDAR 41 (2017) estimated the long-term maximum sustainable yield (MSY) to be about 25% of what it was estimated to be in SEDAR 24 (2010), and projected catch levels from SEDAR 41 at the fishing mortality level predicted to rebuild the stock in the specified timeframe ($F_{Rebuild}$) were approximately 21% of the catch levels projected for 2017 based on SEDAR 24 (2010). Given this, and the various sources of uncertainty in the SEDAR 41 (2017) assessment, the Council sought the SSC's recommendations on additional projection runs and reference point criteria, reliability of MRIP estimates for red snapper (landings and discards), and the risk associated with using different values of MSY (see October 2016 Final SSC Report, Appendix M). In addition, the Council requested that projections under a discards-only scenario be provided for discussion at their March 2017 meeting. However, the SEFSC indicated (via letter dated February 15, 2017) the projections could not be completed due to the length of time since the completion of the assessment, uncertainty in the landings since most landings are coming from discards, and the change in MRIP methodology for estimating landings and discards. Moreover, the Council received a letter from NMFS (dated March 3, 2017) stating the Council has likely taken sufficient action to address overfishing of red snapper in the South Atlantic and should focus efforts on a methodology to obtain an ABC for red snapper. SEDAR 41 was

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updated due to revisions in the headboat index and presented to the SSC in April 2017. Due to the issues laid out by the SEFSC, the Council requested that the SEFSC and the SSC collaborate to explore approaches to arrive at an ABC for red snapper that can be applied to a long-term management approach.

The most recent stock assessment for South Atlantic red snapper, SEDAR 73 (2021) with data through 2019, determined the stock to be overfished and undergoing overfishing. However, SEDAR73 (2021) indicated that the red snapper stock has shown substantial progress toward rebuilding. Similar to SEDAR 41 (2017), SEDAR 73 (2021) also indicated that the primary driver of overfishing is recreational discards. The Council's SSC reviewed results of the assessment at their April and July 2021 meetings, and recommended a new overfishing limit OFL and ABC. The Council received notification from NMFS (via letter dated July 23, 2021) of the status of the red snapper stock in the South Atlantic. The SSC's recommendations were presented to the Council at the September 2021 meeting. Following notification that a stock is undergoing overfishing and is overfished, the Magnuson-Stevens Act requires the Council to develop an FMP amendment with actions that end overfishing immediately and rebuild the affected stock. Since a rebuilding plan is already in place and SEDAR 73 (2021) shows progress towards rebuilding is being made, the Council can continue working through its current rebuilding plan but is still required to take action to end overfishing.

3.2.1.3. Landings, discards, and biomass

Visit <https://www.fisheries.noaa.gov/southeast/about-us/south-atlantic-red-snapper> for more details on the commercial and recreational seasons for South Atlantic red snapper since 2017.

Commercial landings and discards

Commercial landings of South Atlantic red snapper are monitored in pounds whole weight (lbs ww) (Table 3.2.1.1). Georgia landings were confidential so they were added to the east Florida landings. During 2015 and 2016, total removals exceeded the ABC, so the ACL was set to zero. Since 2017, with 2018 as an exception, the commercial ACL has been met in about two months, resulting in an in-season closure. During 2018 and 2021, the commercial sector was closed in-season as the ACL was predicted to be met, but was reopened later in the season in order to reach the ACL.

DRAFT**Table 3.2.1.1.** Total and state commercial landings (lbs ww) of South Atlantic red snapper from 2017 through 2021 and percentage of the commercial ACL landed each year. Years with in-season closures due to approaching or exceeding the commercial ACL are indicated with the closure date and the total number of days the commercial sector was open.

Year	East FL and GA*	NC	SC	Total landings	ACL	ACL %	In-season closure/reopenings	Number of days open
2017	75,491	9,803	3,980	89,274	124,815	71.5	n/a	60
2018	106,769	11,628	9,756	128,153	124,815	102.7	11/7/2018; reopened 12/5 to 12/15/2018	114
2019	108,513	10,074	7,142	125,729	124,815	100.7	8/30/2019	54
2020	115,880	12,307	6,294	134,480	124,815	107.7	9/5/2020	54
2021	103,696	16,178	8,413	128,287	124,815	102.8	9/14/2021; reopened 11/2 to 11/6/2018	68

Source: SERO Commercial ACL dataset: WH_ACLS_2014-2021_31Aug2022.xlsx.

Recreational landings and discards

Recreational landings of South Atlantic red snapper have been monitored in numbers of fish since 2017 (Table 3.2.1.2). East Florida has landed the majority of red snapper since 2017. The length of the red snapper recreational season has declined from 9 days in 2017, to 6 days in 2018, 5 days in 2019, 4 days in 2020, and 3 days in 2021, as a result of the recreational ACL being projected to be reached sooner in each year. Even with the decrease in the number of open days each year, recreational landings of South Atlantic red snapper have exceeded the recreational ACL since 2018. Figure 3.2.1.1 shows a steep decline in estimated recreational landings since 2010, with a great incline of estimated discards.

Table 3.2.1.2. Total and state recreational landings (lbs ww) of South Atlantic red snapper from 2017 through 2021 and percentage of the recreational ACL landed each year. The table also provides the corresponding percentage of recreational ACL landed each year.

Fishing year	Georgia	East Florida	North Carolina	South Carolina	Total landings	ACL	ACL %	Number of Days open
2017	84	13,193	194	799	14,270	29,656	48.1	9
2018	405	37,367	472	223	38,467	29,656	129.7	6
2019	2,243	44,113	150	3,168	49,674	29,656	167.5	5
2020	1,891	36,363	678	3,840	42,772	29,656	144.2	4
2021	807	36,053	1,877	332	39,069	29,656	131.7	3

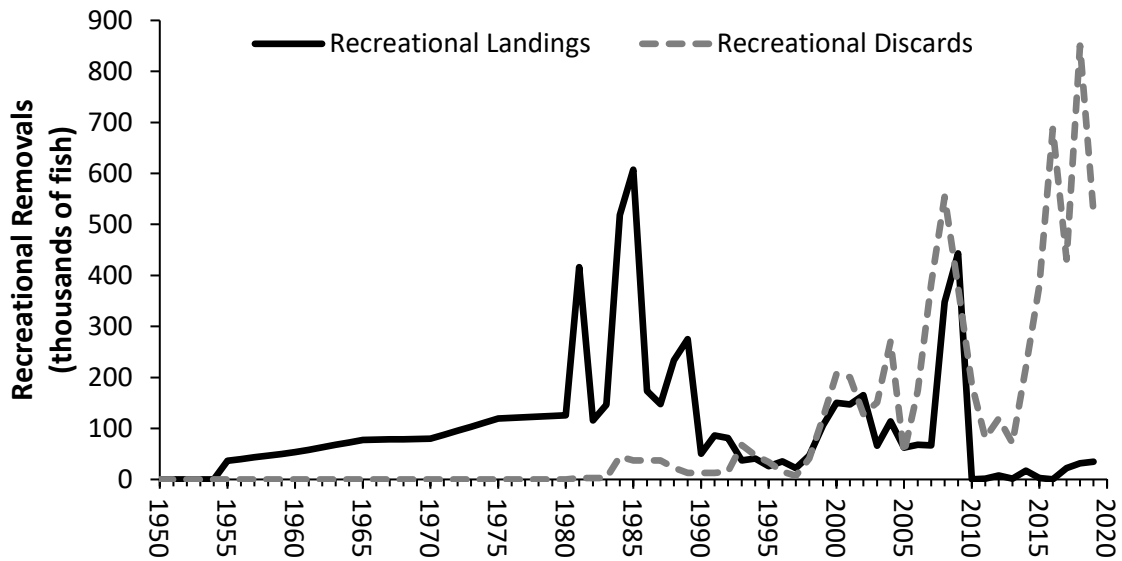


Figure 3.2.1.1. Red snapper recreational landings (black solid) and estimated dead discards (gray dashed) (numbers of fish) from SEDAR 73 (2021) by year from 1950 through 2019.

Biomass

SEDAR 73 (2021) showed an evenly age structure, with a general decline in estimated biomass until the early-1990s. Since the 1990’s until present, there is a relatively stable or increasing pattern of biomass (Figure 3.2.1.2). The terminal year estimates are at levels not seen since around 1980, but with a younger age structure.

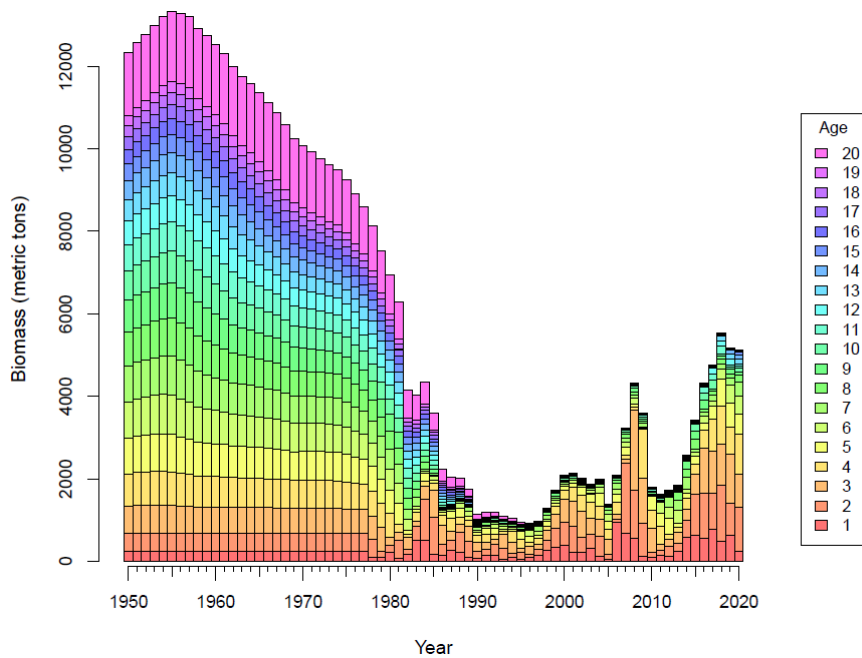


Figure 3.2.1.2. Estimated biomass of South Atlantic red snapper at age at start of year from SEDAR 73 (2021).

3.2.2. Bycatch

Regulatory Amendment 35 is not expected to result in increased bycatch of other fish species. Both sectors likely target a wide range of species other than snapper grouper during each trip, including dolphin wahoo and coastal migratory pelagic species. This results in a varied amount and type of bycatch of species. The top three species caught with red snapper on a commercial trip in the South Atlantic region are vermilion snapper, gray triggerfish and red pogy (Appendix G, Table G-2). For the recreational sector, it is black sea bass, vermilion snapper, and gray triggerfish (Appendix G, Table G-10). Any closures or reductions in fishing effort of South Atlantic red snapper has the potential to reduce the bycatch of these species. The implications of bycatch on the red snapper stock and the snapper grouper fishery are discussed in Chapter 4 and Appendix G (Bycatch Practicability Analysis).

3.2.3. Other Species Affected

This amendment indirectly affects other species in the Snapper Grouper FMU that are caught while fishing for red snapper. For summary information on other snapper grouper species that may be affected by the actions in this plan amendment, refer to Section 3.2.5 in [Vision Blueprint Commercial Regulatory Amendment 27 to the Snapper Grouper FMP](#) (SAFMC 2019).

3.2.4. Protected Species

NMFS manages marine protected species in the Southeast region under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). There are 29 ESA-listed species or distinct population segments (DPS) of marine mammals, sea turtles, fish, and corals managed by NMFS that may occur in federal waters of the South Atlantic or Gulf of Mexico. There are 91 stocks of marine mammals managed within the Southeast region plus the addition of the stocks such as North Atlantic right whales (NARW), and humpback, sei, fin, minke, and blue whales that regularly or sometimes occur in Southeast region managed waters for a portion of the year (Hayes et al. 2017). All marine mammals in U.S. waters are protected under the MMPA. The MMPA requires that each commercial fishery be classified by the number of marine mammals they seriously injure or kill. NMFS's List of Fisheries (LOF)³ classifies U.S. commercial fisheries into three categories based on the number of incidental mortality or serious injury they cause to marine mammals.

Five of the marine mammal species (sperm, sei, fin, blue, and NARW) protected by the MMPA, are also listed as endangered under the ESA. In addition to those five marine mammals, six species or DPSs of sea turtles [green (the North Atlantic DPS and the South Atlantic DPS), hawksbill, Kemp's ridley, leatherback, and the Northwest Atlantic DPS of loggerhead]; nine species or DPSs of fish (the smalltooth sawfish; five DPSs of Atlantic sturgeon; Nassau grouper; oceanic whitetip shark, and giant manta ray); and seven species of coral (elkhorn coral, staghorn coral, rough cactus coral, pillar coral, lobed star coral, mountainous star coral, and boulder coral)

³ <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries/>

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are also protected under the ESA and occur within the action area of the snapper grouper fishery. Portions of designated critical habitat for NARW, the Northwest Atlantic DPS of loggerhead sea turtles, and *Acropora* corals occur within the Council's jurisdiction.

NMFS completed a formal consultation and resulting biological opinion (Bi-Op) on the conservation regulations under the ESA and the authorization of the South Atlantic snapper grouper fishery in federal waters under the Magnuson-Stevens Act, including the fishery managed by the Snapper Grouper FMP, on threatened and endangered species and designated critical habitat dated December 1, 2016. NMFS concluded that the activities addressed in the consultation are not likely to jeopardize the continued existence of any threatened or endangered species, including the North Atlantic right whale, loggerhead sea turtle Northwest Atlantic DPS, leatherback sea turtle, Kemp's ridley sea turtle, green sea turtle North Atlantic DPS, green sea turtle South Atlantic DPS, hawksbill sea turtle, smalltooth sawfish U.S. DPS, or Nassau grouper.

Since completing the December 2016 Bi-Op, NMFS published several final rules that listed additional species and designated critical habitat. On January 22, 2018, the giant manta ray (*Manta birostris*) was listed as threatened under the ESA, effective February 21, 2018. On January 30, 2018, the oceanic whitetip shark (*Carcharinus longimanus*) was listed as threatened under the ESA, effective March 1, 2018. Giant manta rays and oceanic whitetip sharks are found in the South Atlantic EEZ and may be affected by the subject fishery via incidental capture in snapper grouper fishing gear. NMFS has reinitiated formal consultation to address these listings and concluded the authorization of the South Atlantic snapper grouper fishery in federal waters during the re-initiation period will not violate ESA Sections 7(a)(2) or 7(d). For summary information on the protected species that may be adversely affected by the snapper grouper fishery and how they are affected refer to Section 3.2.5 in [Vision Blueprint Commercial Regulatory Amendment 27 to the Snapper Grouper FMP](#) (SAFMC 2019).

3.3. Economic Environment

A description of the red snapper stocks affected by the actions considered in this amendment is provided in Section 3.2. Details on red snapper, and the South Atlantic snapper grouper fishery in general, can be found in Amendment 17A (SAFMC 2010a), Regulatory Amendment 10 (SAFMC 2010b), the Comprehensive ACL Amendment for the South Atlantic Region (SAFMC 2011), Amendment 28 (SAFMC 2013), Amendment 43 (SAFMC 2017), and Regulatory Amendment 33 (SAFMC 2020).

3.3.1. Commercial Sector

Permits

Red snapper (*Lutjanus campechanus*) are one of 55 species managed by the South Atlantic Fishery Management Council's Snapper Grouper Fishery Management plan. Any fishing vessel that harvests and sells any of the snapper grouper species from the South Atlantic Exclusive Economic Zone (EEZ) must have a valid South Atlantic commercial snapper grouper permit, which is a limited access permit. After a permit expires, it can be renewed or transferred up to one year after the date of expiration. As shown in Table 3.3.1.1, the number of permits that were

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valid at any point in a given year decreased steadily from 2016-2020. There were approximately 2% fewer valid permits in 2020, relative to 2016.

Table 3.3.1.1. Number of valid South Atlantic snapper grouper permits, 2016-2020.

Year	Unlimited Permits	225-lb Trip-limited	Total Permits
2016	565	116	681
2017	554	114	668
2018	549	110	659
2019	543	108	651
2020	535	104	639

Source: NMFS SERO Sustainable Fisheries (SF) Access permits database. Accessed 10/17/22

Vessels

The information in Tables 3.3.1.2 and 3.3.1.3 describes the landings and revenue for vessels that harvested South Atlantic red snapper in each year from 2017-2021, as well as their revenue from other species. Vessel participation in the South Atlantic commercial red snapper sector varied over this time period. In 2021 vessel participation increased by 19%, relative to 2017.

Table 3.3.1.2. Number of vessels, trips, and landings (lbs gutted weight [gw]) by year for South Atlantic red snapper.

Year	# of vessels that caught Red Snapper (> 0 lbs gw)	# of trips that caught Red Snapper	Red Snapper landings (lbs gw)	Other species' landings jointly caught w/ Red Snapper	# of SATL trips that only caught other species	Other species' landings on trips w/o Red Snapper	All species landings on Gulf trips (lbs gw)
2017	164	1,154	76,758	267,575	4,535	2,681,772	414,802
2018	201	1,789	111,787	706,877	4,665	2,897,134	309,573
2019	195	1,652	105,378	379,106	4,876	3,031,984	184,234
2020	209	1,723	113,277	410,864	4,825	2,888,757	171,553
2021	195	1,667	106,747	367,442	4,145	2,268,270	151,730
Average	193	1,597	102,789	426,373	4,609	2,753,583	246,378

Source: SEFSC-Social Science Research Group (SSRG) Socioeconomic Panel (Sep. 2022 version)

DRAFT**Table 3.3.1.3.** Number of vessels and ex-vessel revenues by year (2021\$) for South Atlantic red snapper.

Year	# of vessels that caught Red Snapper (> 0 lbs gw)	Dockside revenue from Red Snapper	Dockside revenue from 'other species' jointly caught w/ Red Snapper	Dockside revenue from 'other species' caught on trips w/o Red Snapper	Dockside revenue from 'all species' caught on SATL trips	Total dockside revenue	Average total dockside revenue per vessel
2017	164	\$453,959	\$906,964	\$9,508,423	\$1,177,359	\$12,046,705	\$73,456
2018	201	\$684,305	\$2,657,393	\$9,612,045	\$920,264	\$13,874,007	\$69,025
2019	195	\$662,298	\$1,502,900	\$9,958,564	\$576,732	\$12,700,494	\$65,131
2020	209	\$677,875	\$1,558,664	\$9,663,663	\$645,344	\$12,545,545	\$60,027
2021	195	\$672,628	\$1,343,428	\$7,452,669	\$500,528	\$9,969,253	\$51,124
Average	193	\$630,213	\$1,593,870	\$9,239,073	\$764,045	\$12,227,201	\$63,752

Source: SEFSC-Social Science Research Group (SSRG) Socioeconomic Panel (Sep. 2022 version)

Overall dockside revenue of red snapper varied from year to year in 2017-2021. Red snapper dockside revenue increased by 51% in 2018, relative to 2017 but declined thereafter in 2018 and 2020. Total revenue from red snapper landings in 2021 were 11% greater than 2017, resulting in an overall increase in total revenue during the time period. Revenue from jointly caught species on red snapper trips also varied during this time period. Revenue from jointly caught species tripled in 2018, relative to 2017 but then declined by 42% in 2019. Revenue from jointly caught species still increased by 62% in 2021 relative to 2017. On average from 2017-2021, red snapper accounted only for only 27% of total revenue by vessels harvesting South Atlantic red snapper.

Estimates of economic returns are not directly available for the red snapper commercial sector in the South Atlantic. The most recent analysis that calculated estimates of economic returns for South Atlantic commercial fishing vessels was Liese (pers. comm. 2022). Liese (pers. comm. 2022) calculated economic returns for South Atlantic snapper grouper vessels as well as other segments of interest (SOI). In most cases, these SOIs are at the species or species group. Liese (pers. comm. 2022) produced estimates for a 2018 South Atlantic Snapper Grouper FMP SOI. This SOI consists of all logbook trips by permitted vessels where at least one pound of snapper grouper (snapper, tilefish, and grouper species) managed by the South Atlantic Snapper-Grouper FMP was landed in 2018 using any gear type. This SOI's estimates can be used as a proxy for red snapper estimates. These estimates are specific to economic performance in the years 2014-2018. The analysis also provides average estimates of economic returns across 2014-2018, which are the most useful for current purposes. Estimates in the analysis are based on a combination of Southeast Coastal logbook data, a supplemental economic add-on survey to the logbooks, and an annual economic survey at the vessel level. The economic surveys collect data on gross revenue, variable costs, fixed costs, as well as some auxiliary economic variables (e.g., market value of the vessel). The analysis provides estimates of critical economic variables for the commercial sector in the South Atlantic deepwater fishery. In addition, estimates are

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provided at the trip level and the annual vessel level, of which the latter are most important for current purposes. Findings from the analysis are summarized below.

From an economic returns perspective, the two most critical results at the trip level are the estimates of trip net cash flow and trip net revenue. Trip net cash flow is trip revenue minus the costs for fuel, bait, ice, groceries, miscellaneous, hired crew, and purchases of annual allocation from other allocation holders. Thus, this estimate represents the amount of cash generated by a typical South Atlantic deepwater trip over and above the cash cost of taking the trip (i.e., variable costs of the trip) and is a proxy for producer surplus (PS) at the trip level. Trip net revenue is trip revenue minus the costs for fuel, bait, ice, groceries, miscellaneous, hired crew, and the opportunity cost of owner's time as captain. By including opportunity cost of the owner's time and excluding purchases of annual allocation, trip net revenue is a measure of the commercial fishing trip's economic profit.

Table 3.3.1.4 illustrates the economic "margins" generated on South Atlantic snapper grouper trips, i.e., trip net cash flow and trip net revenue as a percentage of trip revenue. As shown in this table, 48.4% of the average revenues generated on South Atlantic snapper grouper trips were used to pay for crew labor costs. Fuel/supplies costs accounted for a further 26% of revenues and 43% of revenue is cash flow back to the owner(s). The margin associated with trip net revenue was lower at about 26%, as it accounts for the value of an owner operator's time. Thus, trip cash flow and trip net revenue were both positive on average from 2014 -2018, generally indicating that South Atlantic snapper grouper trips were profitable during this time.

DRAFT**Table 3.3.1.4.** Economic characteristics of South Atlantic Snapper Grouper Fishery trips 2014-2018(2021\$).

	2014	2015	2016	2017	2018	Average
Number of Observations	2,964	2,593	2,612	3,527	2,688	
Response Rate (%)	83%	83%	94%	92%	94%	
Trips						
Owner-Operated	83%	88%	82%	78%	73%	80.8%
Fuel Used per Day at Sea (gallons/day)	33	38	41	41	39	38
Total Revenue	100%	100%	100%	100%	100%	100%
Costs (% of Revenue)						
Fuel	13.4%	11.5%	9.3%	8.9%	10.8%	10.8%
Bait	6.9%	7.2%	7.2%	8.4%	7.2%	7.4%
Ice	1.9%	1.9%	2.1%	2.2%	1.8%	2%
Groceries	3.2%	2.8%	3.5%	3.1%	3.5%	3.2%
Miscellaneous	2.8%	2.7%	2.8%	2.5%	2.3%	2.6%
Hired Crew	32.6%	32.8%	29.4%	30.4%	29.5%	30.9%
IFQ Purchase	0%	0%	0%	0%	0%	0%
Owner-Captain Time	19.6%	18.0%	17.0%	17.0%	15.9%	17.5%
Trip Net Cash Flow	39%	41.1%	45.7%	44.4%	44.9%	43%
Trip Net Revenue	20%	23.2%	28.7%	27.4%	29%	26%
Labor - Hired & Owner	52%	50.7%	46.4%	47.4%	45.4%	48.4%
Fuel & Supplies	28%	26.1%	24.9%	25.2%	25.6%	26%
Input Prices						
Fuel Price (per gallon)	\$4.36	\$3.37	\$2.60	\$2.75	\$3.11	\$3.24
Hire Crew Wage (per crew-day)	\$317	\$330	\$290	\$312	\$267	\$303
Productivity Measures						
Landings/Fuel Use (lbs./gallon)	8.7	7.7	6.8	8.4	7.3	8
Landings/Labor Use (lbs./crew-day)	150	149	141	172	143	151

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Table 3.3.1.5 provides estimates of the important economic variables at the annual level for all vessels that had South Atlantic snapper grouper fishery landings from 2014-2018. Similar to the trip level, the three of the most important estimates of economic returns are net cash flow, net revenue from operations, as well as economic return on asset value. Of these measures, net revenue from operations most closely represents economic profits to the owner(s). Net cash flow is total annual revenue minus the costs for fuel, other supplies, hired crew, vessel repair and maintenance, insurance, overhead, loan payments, and purchases of annual allocation. Net revenue from operations is total annual revenue minus the costs for fuel, other supplies, hired crew, vessel repair and maintenance, insurance, overhead, and the opportunity cost of an owner's time as captain as well as the vessel's depreciation. Economic return on asset value is calculated by dividing the net revenue from operations by the vessel value. As shown in Table 3.3.1.5, net cash flow and net revenue from operations at the annual vessel level were both positive from 2014-2016, generally indicating that South Atlantic snapper grouper vessels in the commercial sector were profitable. Specifically, net cash flow and net revenue from operations averaged 22 % and 8%, respectively.

DRAFT**Table 3.3.1.5.** Economic characteristics of South Atlantic snapper grouper vessels from 2014-2018 (2021\$).

	2014	2015	2016	2017	2018	Average
Number of Observations	75	101	94	104	98	
Response Rate (%)	50%	75%	71%	70%	80%	
Vessels						
Owner-Operated	85%	91%	89%	81%	84%	86%
For-Hire Active	22%	19%	12%	19%	11%	17%
Vessel Value	\$91,800	\$91,051	\$109,451	\$122,846	\$103,622	\$103,754
Total Revenue	100%	100%	100%	100%	100%	100%
Costs (% of Revenue)						
Fuel	15.0%	11.7%	10.1%	10.0%	12.1%	11.8%
Other Supplies	12.1%	12.9%	14.5%	12.0%	12.1%	12.7%
Hired Crew	28.4%	23.9%	27.8%	28.3%	24.4%	26.6%
Vessel Repair & Maintenance	14.7%	15.7%	15.1%	10.6%	15.2%	14.3%
Insurance	1.5%	1.6%	2.1%	1.7%	2.0%	1.8%
Overhead	6.8%	8.4%	10.2%	6.0%	7.2%	7.7%
Loan Payment	2.5%	3.3%	4.6%	2.1%	1.5%	2.8%
IFQ Purchase	0.0%	0.1%	0.0%	0.2%	0.1%	0.1%
Owner-Captain Time	10.6%	12.8%	13.1%	9.5%	10.4%	11.3%
Net Cash Flow	19.0%	22.4%	15.5%	29.2%	25.4%	22.0%
Net Revenue for Operations	6.0%	7.7%	0.2%	16.9%	10.4%	8.0%
Depreciation	5.3%	5.3%	6.7%	5.0%	6.3%	5.7%
Fixed Costs	23.0%	25.7%	27.5%	18.3%	24.4%	24.0%
Labor - Hired & Owner	39.0%	26.7%	40.9%	37.8%	34.7%	38.0%
Fuel & Supplies	27.0%	24.7%	24.6%	21.9%	24.2%	24.0%
Economic Return (on asset value)	5.4%	7.3%	20.0%	16.9%	8.3%	7.6%

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Dealers

The information in Table 3.3.1.6 illustrates the purchasing activities of dealers that bought red snapper landings from vessels from 2017 through 2021. The total number of dealers purchasing red snapper increased from 2017-2020, but declined slightly in 2021. The total number of dealers increased only by approximately 7% in 2021 relative to 2017. Total value of red snapper purchases by dealers increased in each year overall between 2017 and 2021. Purchases of red snapper landings increased by over 5,000% in 2021, relative to 2017. The average value of red snapper purchases per dealer also increased dramatically from 2017-2021.

The overall value of other species purchases increased by 575% in 2021, relative to 2017. The average value of other species purchase per dealer increased by about 6% in 2021, relative to 2017. Overall, red snapper made up only approximately 2% of total purchases by red snapper dealers, indicating that there is a very low financial dependency on red snapper landings.

Table 3.3.1.6. Dealer statistics for dealers that purchased red snapper landings by year, 2017-2021. All dollar estimates are in 2021\$.

Year	Number Dealers	Statistic	Red Snapper Purchases	Other Species Purchases	Total Purchases
2017	67	Maximum	\$13,771	\$5,086,825	\$5,086,842
		Total	\$51,556	\$11,665,013	\$11,716,569
		Mean	\$4,687	\$1,060,456	\$1,065,143
2018	70	Maximum	\$167,823	\$10,425,239	\$10,431,269
		Total	\$603,173	\$59,483,987	\$60,087,160
		Mean	\$9,003	\$887,821	\$896,823
2019	73	Maximum	\$111,994	\$8,837,518	\$8,841,052
		Total	\$688,717	\$59,084,351	\$59,773,068
		Mean	\$9,566	\$844,062	\$853,901
2020	74	Maximum	\$155,388	\$11,085,396	\$11,110,164
		Total	\$925,801	\$70,464,449	\$71,390,250
		Mean	\$12,344	\$965,266	\$977,949
2021	72	Maximum	\$1,963,629	\$9,253,789	\$9,473,659
		Total	\$2,862,148	\$78,824,494	\$81,224,057
		Mean	\$39,752	\$1,126,064	\$1,160,344

Source: SERO ALS Data (2022)

Imports

Imports of foreign seafood products compete in the domestic seafood market, and have in fact dominated many segments of the domestic seafood market. Imports aid in determining the price for domestic seafood products and tend to set the price in the market segments in which they dominate. Seafood imports can have downstream effects on the local fish market. At the harvest level, imports can affect the returns to fishermen through the ex-vessel prices they receive for their landings. As substitutes to domestic production, imports tend to cushion the adverse economic effects on consumers resulting from a reduction in domestic landings. The following describes the imports of fish products that directly compete with domestic harvest of snappers including the species in this amendment.

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According to NMFS’ foreign trade data,⁴ snapper are not exported from the U.S. to other countries. Thus, the following describes the imports of fresh and frozen snapper products, which directly compete with domestic harvest of snapper species. All monetary estimates are in 2021 dollars. As shown in Table 3.3.1.7, imports of fresh snapper products were 31.2 million lbs product weight (pw) in 2017. They peaked at 36.0 million lbs pw in 2021, an increase of 15% relative to 2017. Total revenue from snapper imports increased from \$99.0 million (2021 dollars) in 2017 to a five-year high of \$148.6 million in 2021. The average price per pound for fresh snapper products was \$3.54 from 2017-2021. Imports of fresh snapper products primarily originated in Mexico or Central America and primarily entered the U.S. through the port of Miami.

Table 3.3.1.7. Annual pounds and value of fresh snapper imports and share of imports by country, 2017-2021.

	2017	2018	2019	2020	2021
Pounds of fresh snapper imports (product weight, million pounds)	31.2	30.5	32.8	32.4	36.0
Value of fresh snapper imports (millions \$, 2021\$)	99.0	103.5	115.3	113.4	148.6
Average price per lb (2021\$)	\$3.17	\$3.39	\$3.52	\$3.50	\$4.13
Share of Imports by Country					
Mexico	35.8	32.5	34.9	40.4	32.8
Nicaragua	15.4	17.0	14.6	15.1	13.3
Panama	14.8	16.6	13.9	11.0	14.0
All others	33.9	33.9	36.6	33.5	39.9

Source: NOAA Foreign Trade Query Tool, accessed 11/16/22

As shown in Table 3.3.1.8, imports of frozen snapper products were 12.8 million lbs pw in 2017. They peaked at 18.2 million lbs pw in 2021, an increase of 42% relative to 2017. Total revenue from frozen snapper imports increased from \$38.2 million (2021 dollars) in 2017 to a five-year high of \$66.6 million in 2021. The average price per pound for frozen snapper products was \$3.20 from 2017-2021. Imports of frozen snapper products primarily originated in Brazil or South America and primarily entered the U.S. through the port of Miami.

⁴ <https://foss.nmfs.noaa.gov/>

DRAFT**Table 3.3.1.8.** Annual pounds and value of frozen snapper imports and share of imports by country, 2017-2021.

	2017	2018	2019	2020	2021
Pounds of frozen snapper imports (product weight, million pounds)	12.8	12.2	11.4	15.9	18.2
Value of frozen snapper imports (millions \$, 2021\$)	38.2	37.6	36.7	48.4	66.6
Average price per lb (2021\$)	\$2.98	\$3.08	\$3.22	\$3.05	\$3.65
Share of Imports by Country					
Brazil	61.0	63.8	54.6	55.4	58.6
Indonesia	11.0	11.3	6.8	5.4	3.9
Suriname	7.9	6.9	13.5	10.3	10.5
All others	20.1	17.9	25.0	28.9	27.0

Source: NOAA Foreign Trade Query Tool, accessed 11/16/22

Economic Impacts

The commercial harvest and subsequent sales and consumption of fish generates business activity as fishermen expend funds to harvest the fish and consumers spend money on goods and services, such as red snapper purchased at a local fish market and served during restaurant visits. These expenditures spur additional business activity in the region(s) where the harvest and purchases are made, such as jobs in local fish markets, grocers, restaurants, and fishing supply establishments. In the absence of the availability of a given species for purchase, consumers would spend their money on substitute goods and services. As a result, the analysis presented below represents a distributional analysis only; that is, it only shows how economic impacts may be distributed through regional markets and should not be interpreted to represent the impacts if these species are not available for harvest or purchase.

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In addition to these types of impacts, economic impact models can be used to determine the sources of the impacts. Each impact can be broken down into direct, indirect, and induced economic impacts. “Direct” economic impacts are the results of the money initially spent in the study area (e.g., country, region, state, or community) by the fishery or industry being studied. This includes money spent to pay for labor, supplies, raw materials, and operating expenses. The direct economic impacts from the initial spending create additional activity in the local economy, i.e., “indirect” economic impacts. Indirect economic impacts are the results of business-to-business transactions indirectly caused by the direct impacts. For example, businesses initially benefiting from the direct impacts will subsequently increase spending at other local businesses. The indirect economic impact is a measure of this increase in business-to-business activity, excluding the initial round of spending which is included in the estimate of direct impacts. “Induced” economic impacts are the results of increased personal income caused by the direct and indirect economic impacts. For example, businesses experiencing increased revenue from the direct and indirect impacts will subsequently increase spending on labor by hiring more employees, increasing work hours, raising salaries/wage rates, etc. In turn, households will increase spending at local businesses. The induced impact is a measure of this increase in household-to-business activity.

Estimates of the U.S. average annual business activity associated with the commercial harvest of South Atlantic red snapper were derived using the model developed for and applied in NMFS (2021)⁵ and are provided in Table 3.3.1.9. Specifically, these impact estimates reflect the expected impacts from average annual gross revenues generated by landings of South Atlantic red snapper from 2017 through 2021. This business activity is characterized as jobs (full time equivalents), income impacts (wages, salaries, and self-employed income), value-added impacts (the difference between the value of goods and the cost of materials or supplies), and output impacts (gross business sales). Income impacts should not be added to output (sales) impacts because this would result in double counting.

The results provided should be interpreted with caution. These results are based on average relationships developed through the analysis of many fishing operations that harvest many different species. Separate models specific to individual species such as red snapper are not available. Between 2017 and 2021, landings of South Atlantic red snapper resulted in approximately \$630,000 (2021\$) in gross revenue on average. In turn, this revenue generated employment, income, value-added, and output impacts of 75 jobs, \$2.3 million, \$3.2 million, and \$6.3 million per year, respectively, on average.

⁵ A detailed description of the input/output model is provided in NMFS (2021).

DRAFT**Table 3.3.1.9** Average annual economic impacts in the commercial sector of the South Atlantic red snapper. All monetary estimates are in thousands of 2021 dollars and employment is measured in full-time equivalent jobs.

Harvesters	Direct	Indirect	Induced	Total
Employment impacts	13	2	3	18
Income impacts	340	63	153	556
Total value-added impacts	363	227	261	852
Output Impacts	630	513	507	1,650
Primary dealers/processors	Direct	Indirect	Induced	Total
Employment impacts	3	1	2	6
Income impacts	111	102	97	310
Total value-added impacts	118	131	182	431
Output impacts	357	269	356	983
Secondary wholesalers/distributors	Direct	Indirect	Induced	Total
Employment impacts	1	0	1	3
Income impacts	66	20	70	155
Total value-added impacts	71	33	119	222
Output impacts	177	65	231	473
Grocers	Direct	Indirect	Induced	Total
Employment impacts	5	1	1	7
Income impacts	136	45	68	250
Total value-added impacts	145	73	116	333
Output impacts	233	118	227	578
Restaurants	Direct	Indirect	Induced	Total
Employment impacts	34	2	6	42
Income impacts	546	166	313	1,024
Total value-added impacts	582	296	527	1,404
Output impacts	1,064	463	1,039	2,566
Harvesters and seafood industry	Direct	Indirect	Induced	Total
Employment impacts	56	6	13	75
Income impacts	1,199	396	700	2,295
Total value-added impacts	1,278	760	1,205	3,243
Output impacts	2,461	1,428	2,361	6,250

Source: Calculated by NMFS SERO using the model developed for and applied in NMFS (2021).

*Converted to 2021 dollars using the annual, not seasonally adjusted GDP implicit price deflator provided by the U.S. Bureau of Economic Analysis.

3.3.2. Recreational Sector

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The recreational sector is comprised of the private and for-hire modes. The private mode includes anglers fishing from shore (all land-based structures) and private/rental boats. The for-hire mode is composed of charter boats and headboats (also called party boats). Charter boats generally carry fewer passengers and charge a fee on an entire vessel basis, whereas headboats carry more passengers and payment is per person. The type of service, from a vessel- or passenger-size perspective, affects the flexibility to search different fishing locations during the course of a trip and target different species since larger concentrations of fish are required to satisfy larger groups of anglers.

Landings

Recreational South Atlantic red snapper landings have been highly variable from 2017-2021 (Table 3.3.2.1). Landings peaked in 2018 at approximately 5.8 million pounds ww, greatly exceeding any other year's landings. Private vessels accounted for the majority of red snapper landings on average from 2017-2021. Private vessels on average from 2017-2021 accounted for 95% of South Atlantic red snapper landings, charter vessels 4%, and headboats making up the remaining 1%. No shore mode landings for South Atlantic red snapper were recorded. The majority of landings on average occurred in Florida/Georgia (96%) (Table 3.3.2.2). Wave 4, which includes the months of July and August, accounted for the majority of landings on average from 2017-2021 (Table 3.3.2.3).

Table 3.3.2.1. Recreational landings (lbs whole weight [ww]) and percent distribution of South Atlantic red snapper across all states by mode for 2017-2021.

	Landings (pounds ww)				Percent Distribution		
	Charter vessel	Headboat	Private	Total	Charter vessel	Headboat	Private
2017	28,991	17,523	1,017,394	1,063,907	3%	2%	96%
2018	27,204	30,126	5,783,748	5,841,077	0%	1%	99%
2019	243,857	26,279	2,055,295	2,325,432	10%	1%	88%
2020	37,060	18,305	4,519,858	4,575,222	1%	0%	99%
2021	53,519	9,308	821,032	883,859	6%	1%	93%
AVG	78,126	20,308	2,839,465	2,937,899	4%	1%	95%

Source: MRIP FES ACL dataset (June22 version).

DRAFT**Table 3.3.2.2.** Recreational landings (lbs ww) and percent distribution of South Atlantic red snapper by state* for 2017-2021.

	Landings (pounds ww)				Percent Distribution		
	FL/GA	NC	SC	Total	FL/GA	NC	SC
2017	1,051,273	1,172	11,462	1,063,907	99%	0%	1%
2018	5,835,402	3,904	1,771	5,841,077	100%	0%	0%
2019	2,160,968	1,050	163,413	2,325,432	93%	0%	7%
2020	4,481,704	7,568	85,950	4,575,222	98%	0%	2%
2021	807,918	74,996	945	883,859	91%	8%	0%
AVG	2,867,453	17,738	52,708	2,937,899	96%	2%	2%

Source: MRIP FES ACL dataset (June22 version).

*Florida and Georgia's landings are reported together for confidentiality purposes.

Table 3.3.2.3. Recreational landings (lbs ww) and percent distribution of South Atlantic red snapper by MRIP wave for 2017-2021.

	Landings (pounds ww)					
	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
2017	7	0	12,816	1,793	104,675	944,615
2018	0	364	26,364	5,814,237	112	0
2019	354	0	3,410	2,321,668	0	0
2020	0	0	1,124	4,574,098	0	0
2021	0	0	7,018	833,015	1,370	42,456
AVG	72	73	10,147	2,708,962	21,231	197,414
	Percent Distribution					
	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
2017	0%	0%	1%	0%	10%	89%
2018	0%	0%	0%	100%	0%	0%
2019	0%	0%	0%	100%	0%	0%
2020	0%	0%	0%	100%	0%	0%
2021	0%	0%	1%	94%	0%	5%
AVG	0%	0%	1%	79%	2%	19%

Source: MRIP FES ACL dataset (June22 version).

Actions 1 & 2 of this framework amendment are likely to affect recreational harvest for the entire snapper grouper complex in the South Atlantic. Therefore, information on recreational fishing of all South Atlantic snapper grouper species combined are presented in this sections as well. Total recreational South Atlantic snapper grouper landings have been highly variable from 2017-2021 (Table 3.3.2.4). Landings peaked in 2020 at approximately 36.2 million pounds ww. Private vessels accounted for the majority of snapper grouper landings on average from 2017-2021. Private vessels on average from 2017-2021 accounted for 54% of South Atlantic snapper grouper landings, shore mode 38%, charter vessels 5%, and Headboats the remaining 3%. The majority of landings on average occurred in Florida/Georgia (86%) (Table 3.3.2.5). Wave 4,

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which includes the months of July and August, accounted for the majority of landings on average from 2017-2021 (Table 3.3.2.6).

Table 3.3.2.4. Recreational landings in millions of pounds (whole weight [ww]) and percent distribution of South Atlantic snapper grouper across all states by mode for 2017-2021.

	Landings (pounds ww)					Percent Distribution			
	Charter vessel	Headboat	Private	Shore	Total	Charter vessel	Headboat	Private	Shore
2017	1.54	1.01	12.71	12.02	27.28	6%	4%	47%	44%
2018	0.96	0.93	19.08	9.51	30.48	3%	3%	63%	31%
2019	1.47	0.90	13.45	5.32	21.15	7%	4%	64%	25%
2020	1.36	0.70	13.94	20.16	36.16	4%	2%	39%	56%
2021	1.21	0.78	12.64	7.18	21.82	6%	4%	58%	33%
AVG	1.31	0.87	14.36	10.84	27.38	5%	3%	54%	38%

Source: MRIP FES ACL dataset (June22 version).

Table 3.3.2.5. Recreational landings (lbs ww) and percent distribution of South Atlantic snapper grouper by state for 2017-2021.

	Landings (pounds ww)				Percent Distribution		
	FL/GA	NC	SC	Total	FL/GA	NC	SC
2017	22,263,391	2,607,413	2,410,783	27,281,588	82%	10%	9%
2018	27,582,838	1,847,337	1,049,574	30,479,750	90%	6%	3%
2019	17,808,772	1,593,236	1,745,097	21,147,105	84%	8%	8%
2020	32,191,628	2,416,450	1,550,532	36,158,611	89%	7%	4%
2021	18,694,055	2,038,440	1,086,734	21,819,230	86%	9%	5%
AVG	23,708,137	2,100,575	1,568,544	27,377,257	86%	8%	6%

Source: MRIP FES ACL dataset (June22 version).

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Table 3.3.2.6. Recreational landings (lbs ww) and percent distribution of South Atlantic snapper grouper by MRIP wave for 2017-2021.

Landings (pounds ww)						
	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
2017	2,615,837	2,458,858	6,648,124	6,997,684	4,418,404	4,142,681
2018	3,498,157	2,843,908	2,912,870	14,758,749	2,997,640	3,468,427
2019	2,782,073	2,722,135	6,307,992	6,894,244	1,014,026	1,426,634
2020	2,249,341	1,730,458	3,438,747	21,396,427	4,115,974	3,227,663
2021	3,560,321	3,145,618	2,631,837	6,134,520	3,631,422	2,715,510
AVG	2,941,146	2,580,195	4,387,914	11,236,325	3,235,493	2,996,183
Percent Distribution						
	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
2017	10%	9%	24%	26%	16%	15%
2018	11%	9%	10%	48%	10%	11%
2019	13%	13%	30%	33%	5%	7%
2020	6%	5%	10%	59%	11%	9%
2021	16%	14%	12%	28%	17%	12%
AVG	11%	10%	17%	39%	12%	11%

Source: MRIP FES ACL dataset (June22 version).

Permits

For-hire Permits

There are no specific federal permitting requirements for recreational anglers to fish for or harvest red snapper. The same is true of private recreational vessel owners. Instead, private anglers are required to either possess a state recreational fishing permit that authorizes saltwater fishing in general, or be registered in the federal National Saltwater Angler Registry system, subject to appropriate exemptions. As a result, it is not possible to identify with available data how many individual anglers or private recreational vessels would be expected to be affected by the actions in this amendment.

A federal charter/headboat (for-hire) vessel permit is also required for fishing in federal waters for South Atlantic snapper-grouper. For-hire Atlantic Snapper Grouper permits are open access permits (i.e., access is not restricted). From 2016-2020, the number of For-hire South Atlantic Snapper Grouper permits that were valid in a given year has increased every year until 2019 as illustrated in Table 3.3.2.7. The number of For-hire South Atlantic Snapper Grouper permits that were valid fell by 2% in 2020, relative to 2019.

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Table 3.3.2.7. Number of valid For-hire South Atlantic Snapper Grouper permits, 2016-2020.

Year	Number of Permits
2016	1,867
2017	1,982
2018	2,126
2019	2,183
2020	2,136

Source: NMFS SERO SF Access Permits Database 07/08/22.

Angler Effort

Recreational effort derived from the MRIP database can be characterized in terms of the number of angler trips as follows:

- Target effort - The number of individual angler trips, regardless of duration, where the intercepted angler indicated that the species or a species in the species group was targeted as either the first or the second primary target for the trip. The species did not have to be caught.
- Catch effort - The number of individual angler trips, regardless of duration and target intent, where the individual species or a species in the species group was caught. The fish did not have to be kept.
- Total recreational trips - The total estimated number of recreational trips in the Gulf, regardless of target intent or catch success.

Other measures of effort are possible, such as directed trips (the number of individual angler trips that either targeted or caught a particular species).⁶

Tables 3.3.2.8 and 3.3.2.9 describe the recreational target and catch trips for red snapper in the South Atlantic from 2017-2021. There are no catch or target trips by shore mode for red snapper in the South Atlantic. Private vessels represent 97% of red snapper target effort in the recreational sector. The majority of target effort occurs by private vessels in Florida (94%), followed by private vessel target effort occurring in South Carolina and North Carolina (Table 3.3.2.8).

Private vessels are also responsible for the majority of catch effort for red snapper (95%). Catch effort by charter vessels represents the remaining 5% of the total catch effort. Private vessels in Florida account for the majority of catch effort for red snapper (92%), followed by charter vessels also in Florida (5%). As expected, the trends in catch effort mimic the trends in landings, with the peak occurring in 2018 (Table 3.3.2.9).

⁶ <https://www.st.nmfs.noaa.gov/recreational-fisheries/data-and-documentation/queries/index>

DRAFT**Table 3.3.2.8.** Red snapper recreational target trips, by mode and state, 2017-2021.

Mode	Year	Florida	Georgia	North Carolina	South Carolina	Total
Charter	2017	3,981	0	0	0	0
	2018	2,336	196	380	0	2,912
	2019	15,416	415	0	0	15,831
	2020	3,843	0	0	535	4,378
	2021	3,028	0	22	0	3,050
	Average	5,721	122	80	107	5,234
Private	2017	132,407	0	0	0	132,407
	2018	1,022,123	4,475	0	2,478	1,029,076
	2019	142,558	17,770	1,087	29,000	190,415
	2020	652,654	13,584	491	49,846	716,575
	2021	101,429	7,893	8,119	0	117,441
	Average	410,234	8,744	1,939	20,331	437,183
All	2017	136,388	0	0	0	136,388
	2018	1,024,459	4,671	380	2,478	1,031,988
	2019	157,974	18,185	1,087	29,000	206,246
	2020	656,497	13,584	491	50,381	720,953
	2021	104,457	7,893	8,141	0	120,491
	Average	415,955	8,867	2,020	16,372	443,213

Source: MRIP Survey Data available at:

<https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads>.

Table 3.3.2.9. Red Snapper recreational catch trips, by mode and state, 2017-2021.

Mode	Year	Florida	Georgia	North Carolina	South Carolina	Total
Charter	2017	30,479	76	306	848	31,709
	2018	25,691	1,432	897	1,028	29,048
	2019	41,451	562	212	2,639	44,864
	2020	36,683	314	1,117	1,820	39,934
	2021	36,164	374	1,834	2,622	40,994
	Average	34,094	552	873	1,791	37,310
Private	2017	360,769	23,372	2,200	16,831	403,172
	2018	1,056,090	11,014		2,842	1,069,946
	2019	547,307	28,466	4,871	33,704	614,348
	2020	841,022	29,765	6,999	42,201	919,987
	2021	450,636	22,981	15,598	32,175	521,390
	Average	651,165	23,120	7,417	25,551	705,769
All	2017	391,248	23,448	2,506	17,679	434,881
	2018	1,081,781	12,446	897	3,870	1,098,994
	2019	588,758	29,028	5,083	36,343	659,212
	2020	877,705	30,079	8,116	44,021	959,921
	2021	486,800	23,355	17,432	34,797	562,384
	Average	685,258	23,671	6,807	27,342	743,078

Source: MRIP Survey Data available at:

<https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads>.

Tables 3.3.2.10 and 3.3.2.11 describe the recreational target and catch trips for all snapper grouper species combined in the South Atlantic from 2017-2021. Private vessels represent 61% of snapper grouper target effort in the recreational sector. Shore mode accounted for 38% snapper grouper target effort, and charter vessel the remaining 1%. The majority of target effort occurs by private vessels in Florida (53%), followed by private vessel target effort occurring in South Carolina and North Carolina (Table 3.3.2.10).

Private vessels and shore mode each accounted for 49% of the total catch effort for all snapper grouper species. Catch effort by charter vessels only represents 2% of the total catch effort. Florida accounted for the majority of catch effort for snapper grouper species combined (81%). Shore mode and private vessels in Florida accounted for 42% and 38% of the total South Atlantic snapper grouper recreational target effort. Generally, the trends in catch effort mimic the trends in landings, however, catch effort peaked in 2017 at 10.3 million trips whereas target trips peaked in 2020 at 2.5 million trips (Table 3.3.2.11).

DRAFT**Table 3.3.2.10.** South Atlantic snapper grouper recreational target trips, by mode and state, 2017-2021.

Mode	Year	Florida	Georgia	North Carolina	South Carolina	Total
Charter	2017	7,023	1,561	1,320	8,348	18,252
	2018	10,086	238	2,276	1,432	14,032
	2019	29,985	652	3,755	3,125	37,517
	2020	14,659	189	9,154	1,817	25,818
	2021	17,868	581	2,951	4,941	26,341
	Average	15,924	644	3,891	3,933	24,392
Private	2017	713,322	31,807	109,039	76,500	930,668
	2018	1,850,842	52,472	24,964	16,728	1,945,006
	2019	675,967	26,558	36,214	110,780	849,518
	2020	1,261,442	48,657	49,977	105,971	1,466,047
	2021	860,187	25,837	46,522	50,816	983,362
	Average	1,072,352	37,066	53,343	72,159	1,234,920
Shore	2017	526,436	2,195	19,308	1,822	549,761
	2018	362,073	1,235	13,757	534	377,599
	2019	648,635	9,560	40,269	855	699,319
	2020	1,010,864	6,257	4,867	13,641	1,035,629
	2021	1,036,675	2,724	57,117	19,161	1,115,678
	Average	716,937	4,394	27,064	7,203	755,597
All	2017	1,246,781	35,563	129,667	86,670	1,498,681
	2018	2,223,001	53,945	40,997	18,694	2,336,637
	2019	1,354,587	36,770	80,238	114,760	1,586,354
	2020	2,286,965	55,103	63,998	121,429	2,527,494
	2021	1,914,730	29,142	106,590	74,918	2,125,381
	Average	1,805,213	42,105	84,298	83,294	2,014,909

Source: MRIP Survey Data available at:

<https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads>.

DRAFT**Table 3.3.2.11.** South Atlantic snapper grouper recreational catch trips, by mode and state, 2017-2021.

Mode	Year	Florida	Georgia	North Carolina	South Carolina	Total
Charter	2017	100,827	3,852	17,040	39,709	161,427
	2018	94,649	2,533	22,676	16,581	136,440
	2019	114,899	1,278	22,488	26,545	165,210
	2020	111,813	1,086	40,976	18,930	172,805
	2021	140,237	3,643	23,583	25,599	193,063
	Average	112,485	2,478	25,353	25,473	165,789
Private	2017	3,274,632	163,839	722,956	537,773	4,699,201
	2018	4,476,137	96,607	363,015	281,485	5,217,245
	2019	3,081,985	159,939	443,487	309,921	3,995,332
	2020	3,404,848	128,138	513,652	306,119	4,352,758
	2021	3,525,401	117,842	488,235	384,568	4,516,046
	Average	3,552,601	133,273	506,269	363,973	4,556,116
Shore	2017	4,642,073	182,447	507,940	112,857	5,445,317
	2018	4,035,392	117,084	219,265	149,712	4,521,453
	2019	3,159,885	67,439	261,482	326,113	3,814,919
	2020	4,385,816	63,736	216,412	188,663	4,854,628
	2021	3,350,958	233,276	297,994	239,431	4,121,659
	Average	3,914,825	132,796	300,619	203,355	4,551,595
All	2017	8,017,532	350,138	1,247,936	690,339	10,305,945
	2018	8,606,178	216,224	604,956	447,778	9,875,138
	2019	6,356,769	228,656	727,457	662,579	7,975,461
	2020	7,902,477	192,960	771,040	513,712	9,380,191
	2021	7,016,596	354,761	809,812	649,598	8,830,768
	Average	7,579,910	268,548	832,240	592,801	9,273,501

Source: MRIP Survey Data available at:

<https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-data-downloads>.

Similar analysis of recreational effort is not possible for the headboat mode in the South Atlantic because headboat data are not collected at the angler level. Estimates of effort by the headboat mode are provided in terms of angler days, or the number of standardized 12-hour fishing days that account for the different half-, three-quarter-, and full-day fishing trips by headboats. The stationary “fishing for demersal (bottom-dwelling) species” nature of headboat fishing, as opposed to trolling, suggests that most, if not all, headboat trips and, hence, angler days, are demersal or snapper grouper trips by intent.

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Headboat angler days were variable across the South Atlantic states from 2017 through 2021 (Table 3.3.2.12). Florida/Georgia were responsible for the vast majority of headboat effort during this time, accounting for about 67% of the total headboat effort. Headboat effort in Florida/Georgia declined considerably in 2020, about 32% relative to the previous three years. Headboat effort in North Carolina and South Carolina effort vacillated during this time period, but to a much lesser extent than Florida/Georgia.

Table 3.3.2.12. South Atlantic headboat angler days and percent distribution by state (2017-2021).

	Angler Days			Percent Distribution		
	EFL/GA*	NC	SC	EFL/GA	NC	SC
2017	126,126	20,170	36,914	68.80%	11.00%	20.10%
2018	120,560	16,813	37,611	68.90%	9.60%	21.50%
2019	119,712	15,546	41,470	67.70%	8.80%	23.50%
2020	84,003	14,152	34,079	63.53%	10.70%	25.77%
2021	120,359	19,715	47,907	64.03%	10.49%	25.49%
Average	114,152	17,279	39,596	66.59%	10.12%	23.27%

Source: NMFS Southeast Region Headboat Survey (SRHS) data 09/20/22.

*Florida and Georgia are combined for confidentiality purposes.

Economic Value

Participation, effort, and harvest are indicators of the value of saltwater recreational fishing. However, a more specific indicator of value is the satisfaction that anglers experience over and above their costs of fishing. The economic value of this satisfaction is referred to as consumer surplus (CS). The value or benefit derived from the recreational experience is dependent on several quality determinants, which include fish size, catch success rate, and the number of fish kept. These variables help determine the value of a fishing trip and influence total demand for recreational fishing trips. Carter and Liese (2012) produced estimates of CS for red snapper South Atlantic. Carter and Liese (2012) produced estimates of CS for red snapper South Atlantic. The CS for catching and keeping a second red snapper⁷ on an angler trip is approximately \$74.54 (2021\$), and decreases thereafter (approximately \$49.69 for a third red snapper, \$36.62 for a fourth red snapper, and \$28.88 for a fifth grouper (Carter and Liese 2012).

Estimates of average annual gross revenue for charter vessels are only available from Holland (2012). After adjusting for inflation, the best available estimate of average annual charter vessel revenue is \$132,038 (2021\$). Holland (2012) also provided an estimate of average annual gross revenue for South Atlantic headboats, which is \$233,436 in 2021\$. However, a more recent estimate of average annual gross revenue for South Atlantic headboats is available from D. Carter (pers. comm., March 15, 2018). Carter (2018) recently estimated that average annual gross revenue for South Atlantic headboats were approximately \$320,323 (2021\$) in 2017. This estimate is likely the best current estimate of annual gross revenue for South Atlantic headboats as it is based on a relatively large sample and is more recent. The difference

⁷ The study only considered trips with at least one fish caught and kept in its experimental design; thus, an estimate for the first caught and kept fish is not available.

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in the Holland (2012) and Carter (2018) estimate for headboats suggests that the estimate for charter vessels based on Holland (2012) is likely an underestimate of current average annual revenue for charter vessels.

However, gross revenues overstate the annual economic value and profits generated by for-hire vessels. Economic value for for-hire vessels can be measured by annual PS. In general, PS is the amount of money a vessel owner earns in excess of variable (trip) costs. Economic profit is the amount of money a vessel owner earns in excess of variable and fixed costs, inclusive of all implicit costs, such as the value of a vessel owner's time as captain and as entrepreneur, and the cost of using physical capital (i.e., depreciation of the vessel and gear). Estimates of PS and economic profit for headboats is not available from Carter (2018) as that study did not collect cost data. Although Holland (2012) did collect cost data, concerns have been raised about the accuracy of their cost estimates, and thus estimates of average annual vessel PS and profit have not been generated using those estimates.

With regard to for-hire trips, economic value can be measured by PS per angler trip, which represents the amount of money that a vessel owner earns in excess of the cost of providing the trip. Estimates of trip revenue, trip costs, and trip net revenue trips taken by headboats and charter vessels in 2017 are available from Souza and Liese (2019). They also provide estimates of net cash flow per angler trip, which approximate PS per angler trip. As shown in Table 3.3.2.13, after accounting for transactions fees, supply costs, and labor costs, net revenue per trip was 40% of revenue for South Atlantic charter vessels and 54% of revenue for Southeast headboats, or \$583 and \$1,911 (2021\$), respectively. Given the respective average number of anglers per trip for each fleet, PS per angler trip is estimated to be \$124 for charter vessels and \$68 for headboats.

Table 3.3.2.13. Trip economics for offshore trips by South Atlantic charter vessels and Southeast headboats in 2017 (2021\$).

	South Atlantic Charter Vessels	Southeast Headboats
Revenue	100%	100%
Transaction Fees (% of revenue)	3%	6%
Supply Costs (% of revenue)	29%	19%
Labor Costs (% of revenue)	28%	22%
Net Revenue per trip including Labor costs (% of revenue)	40%	54%
Net Revenue per Trip	\$583	\$1,911
Average # of Anglers per Trip	4.7	28.2
Trip Net Cash Flow per Angler Trip	\$124	\$68

Source: Souza and Liese (2019)

Business Activity

The desire for recreational fishing generates economic activity as consumers spend their income on various goods and services needed for recreational fishing. This spurs economic activity in the region where recreational fishing occurs. It should be clearly noted that, in the absence of the opportunity to fish, the income would presumably be spent on other goods and services and these expenditures would similarly generate economic activity in the region where the expenditure occurs. As such, the analysis below represents a distributional analysis only.

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Estimates of the business activity (economic impacts) associated with recreational angling for South Atlantic red snapper and all snapper-grouper species combined were calculated using average trip-level impact coefficients derived from the 2018 Fisheries Economics of the U.S. report (NMFS 2021) and underlying data provided by the National Oceanic and Atmospheric Administration (NOAA) Office of Science and Technology. Economic impact estimates in 2018 dollars were adjusted to 2021 dollars using the annual, not seasonally adjusted gross domestic product (GDP) implicit price deflator provided by the U.S. Bureau of Economic Analysis.

Business activity (economic impacts) for the recreational sector is characterized in the form of jobs (full- and part-time), income impacts (wages, salaries, and self-employed income), output impacts (gross business sales), and value-added impacts (contribution to the GDP in a state or region). Estimates of the average annual economic impacts (2017–2021) resulting from red snapper charter and private vessel target trips are provided in Table 3.3.2.14. Estimates of the average annual economic impacts (2017–2021) resulting from all South Atlantic snapper grouper charter, private vessel, and shore mode target trips are provided in Table 3.3.2.15. To calculate the multipliers from Table 3.3.2.14 and Table 3.3.2.15, simply divide the desired impact measure (sales impact, value-added impact, income impact or employment) associated with a given state by the number of target trips for that state.

The estimates provided in Table 3.3.2.14 and Table 3.3.2.15 only apply at the state-level. Addition of the state-level estimates to produce a regional (or national) total may underestimate the actual amount of total business activity, because state-level impact multipliers do not account for interstate and interregional trading. It is also important to note that these economic impacts estimates are based on trip expenditures only and do not account for durable expenditures. Durable expenditures cannot be reasonably apportioned to individual species. As such, the estimates provided in Table 3.3.2.14 and Table 3.3.2.15 may be considered a lower bound on the economic activity associated with those trips that targeted red snapper or all snapper grouper species combined.

Estimates of the business activity associated with headboat effort are not available. Headboat vessels are not covered in MRIP in the Southeast, so, in addition to the absence of estimates of target effort, estimation of the appropriate business activity coefficients for headboat effort has not been conducted.

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Table 3.3.2.14. Estimated average annual economic impacts (2017-2021) from South Atlantic charter and private vessel red snapper target trips, by state, using state-level multipliers. All monetary estimates are in 2021 dollars in thousands.

	NC	SC	GA	FL
Charter Mode				
Target Trips	80	107	122	5,721
Value Added Impacts	\$36	\$27	\$24	\$1,414
Sales Impacts	\$62	\$48	\$41	\$2,373
Income Impacts	\$21	\$16	\$14	\$836
Employment (Jobs)	1	0	0	21
Private/Rental Mode				
Target Trips	1,939	20,331	8,744	410,234
Value Added Impacts	\$64	\$500	\$229	\$11,912
Sales Impacts	\$105	\$767	\$347	\$17,773
Income Impacts	\$37	\$235	\$111	\$5,885
Employment (Jobs)	1	9	4	163
All Modes				
Target Trips	2,019	20,438	8,866	415,955
Value Added Impacts	\$99	\$527	\$253	\$13,326
Sales Impacts	\$167	\$815	\$388	\$20,145
Income Impacts	\$58	\$251	\$125	\$6,721
Employment (Jobs)	2	10	5	184

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Table 3.3.2.15. Estimated average annual economic impacts (2017-2021) from South Atlantic snapper grouper target trips, by state and mode, using state-level multipliers. All monetary estimates are in 2021 dollars in thousands.

	NC	SC	GA	FL
Charter Mode				
Target Trips	3,891	3,933	644	15,924
Value Added Impacts	\$1,728	\$1,011	\$128	\$3,935
Sales Impacts	\$3,002	\$1,756	\$216	\$6,605
Income Impacts	\$1,017	\$583	\$73	\$2,327
Employment (Jobs)	29	18	2	59
Private/Rental Mode				
Target Trips	53,343	72,159	37,066	1,072,352
Value Added Impacts	\$1,753	\$1,773	\$970	\$31,138
Sales Impacts	\$2,898	\$2,723	\$1,472	\$46,457
Income Impacts	\$1,011	\$835	\$471	\$15,383
Employment (Jobs)	26	33	18	426
Shore Mode				
Target Trips	27,064	7,203	4,394	716,937
Value Added Impacts	\$1,797	\$366	\$163	\$16,417
Sales Impacts	\$2,956	\$579	\$264	\$24,235
Income Impacts	\$1,040	\$194	\$87	\$8,310
Employment (Jobs)	27	6	3	224
All Modes				
Target Trips	84,298	83,295	42,104	1,805,213
Value Added Impacts	\$5,278	\$3,150	\$1,260	\$51,490
Sales Impacts	\$8,856	\$5,058	\$1,952	\$77,297
Income Impacts	\$3,068	\$1,612	\$631	\$26,021
Employment (Jobs)	83	57	23	709

3.4. Social Environment

This regulatory amendment affects the commercial and recreational management of red snapper and the recreational management of snapper grouper in the South Atlantic. This section provides the background for the proposed actions, which are evaluated in Chapter 4. Commercial and recreational red snapper landings and snapper grouper permits by state are included to provide information on the geographic distribution of fishing involvement. Descriptions of the top-ranking communities by the number of commercial snapper grouper permits are included, top communities based on commercial landings of red snapper, commercial engagement and reliance for the top communities based on commercial landings of red snapper, top-ranking communities by the number of for-hire snapper grouper permits, and top communities based on recreational engagement and reliance. Community level data are presented in order to meet the requirements

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of National Standard 8 of the Magnuson-Stevens Act, which requires the consideration of the importance of fishery resources to human communities when changes to fishing regulations are considered. Lastly, social vulnerability data are presented to assess the potential for environmental justice concerns. Additional detailed information about communities in the following analysis can be found on the SERO's Community Snapshots website.⁸

3.4.1. Commercial Sector

Landings by State

The greatest proportion of commercial red snapper landings came from waters adjacent to Florida and Georgia (average of 84.2% from 2017-2021, SEFSC Commercial ACL File), followed by North Carolina (10.4%), and South Carolina (8.8%). The landings for Florida and Georgia are combined to protect confidentiality; however the proportion of landings attributable to Georgia is minor.

Permits

The majority of snapper grouper unlimited permits are issued to individuals in Florida (67.2%), followed by North Carolina (19.3%), South Carolina (7.9%), and Georgia (1.5%, SERO Permits Office, April 8, 2021). Residents of other states (Illinois Louisiana, Michigan, Minnesota, New Jersey, New York, Ohio, Texas, and West Virginia) also hold snapper grouper unlimited permits, but these states represent a small percentage of the issued permits.

South Atlantic snapper grouper unlimited permits are held by individuals with mailing addresses in 152 communities (SERO Permits Office, April 8, 2021). Communities with the most snapper grouper unlimited permits are located in Florida, South Carolina, North Carolina, and Texas (Table 3.4.1.1). The communities with the most snapper grouper unlimited permits are Key West (9.8% of snapper grouper unlimited permits), Jacksonville (7.9%), and Miami, Florida (3.7%).

⁸ <https://www.fisheries.noaa.gov/southeast/socioeconomics/snapshots-human-communities-and-fisheries-gulf-mexico-and-south-atlantic>

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Table 3.4.1.1. Top communities by number of South Atlantic snapper grouper unlimited permits and 225-lb trip-limited permits.

State	Community	Unlimited Permits	State	Community	225-lb Trip-Limited Permits
FL	Key West	51	FL	Key West	9
FL	Jacksonville	41	FL	Marathon	8
FL	Miami	19	FL	Jupiter	6
FL	Rockledge	13	FL	Big Pine Key	5
SC	Little River	12	FL	Miami	5
FL	Marathon	11	FL	Summerland Key	5
NC	Southport	11	FL	Fort Pierce	3
FL	Key Largo	10	FL	Key Largo	3
FL	Summerland Key	10	NC	Wilmington	3
NC	Hampstead	10			
SC	Murrells Inlet	10			
FL	Hialeah	9			
FL	Jupiter	9			
FL	Port Orange	9			
FL	Tavernier	9			
FL	Winter Springs	8			
TX	Corpus Christi	8			

Source: SERO Permits Office, April 8, 2021.

The majority of snapper grouper 225-lb trip-limited permits are issued to individuals in Florida (85.6%), followed by North Carolina (9.3%, SERO Permits Office, April 8, 2021). Residents of other states (New Jersey, South Carolina, Texas, and Virginia) also hold snapper grouper 225-lb trip-limited permits, but these states represent a small percentage of the issued permits.

South Atlantic commercial snapper grouper 225-lb trip-limited permits are held by individuals with mailing addresses in 51 communities (SERO Permits Office, April 8, 2021). Communities with the most commercial snapper grouper 225-lb trip-limited permits are located in Florida and North Carolina (Table 3.4.1.1). The communities with the most snapper grouper 225-lb trip-limited permits are Key West (9.3% of snapper grouper 225-lb trip-limited permits), Marathon (8.2%), and Jupiter, Florida (6.2%).

Regional Quotient

The descriptions of communities include information about the top communities based on a “regional quotient” (RQ) of commercial landings for red snapper. The RQ is the proportion of landings out of the total landings of that species for that region and that year, and is a relative measure. The RQ is reported individually only for the top 10 communities by total landings for the years of 2017 through 2021. All other communities that landed red snapper are grouped as “Other Communities.” Figure 3.4.1.1 shows the RQ in percentage of pounds from 2017 to 2021. A time series is presented because landings of red snapper by community are highly variable by

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year because of a short season and difference in landings per year. The top community of Cocoa, Florida has relatively stable landings by year; however the landings of many communities fluctuate and a few top communities have no landings of red snapper in some years. The top red snapper communities are located in Florida and North Carolina. About 30% of the total red snapper landings from 2017 to 2021 is landed in the top two communities of Sanford and Cocoa Beach, Florida combined.

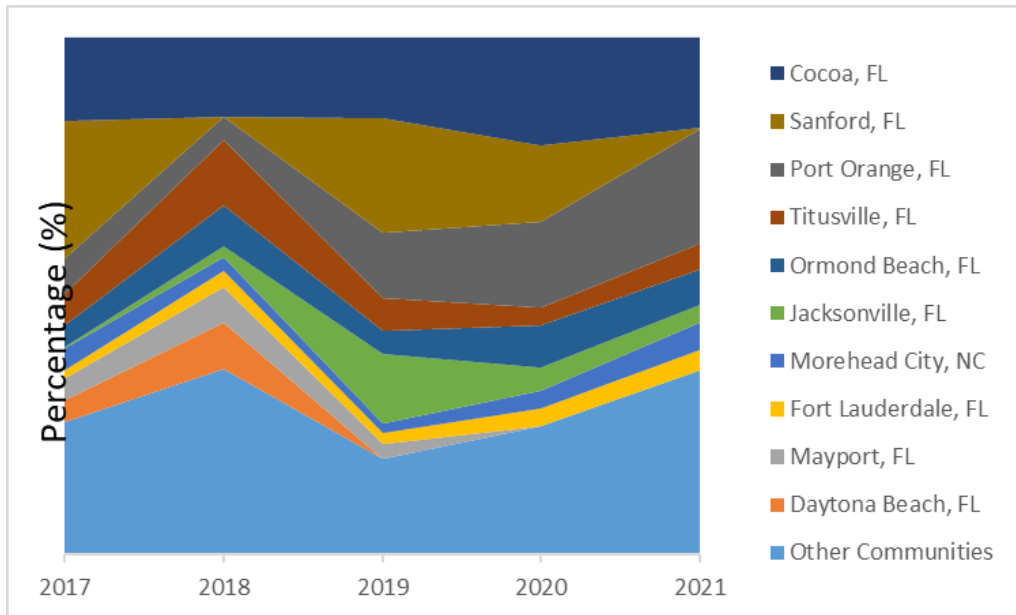


Figure 3.4.1.1. Regional Quotient (pounds) for top South Atlantic communities by red snapper landings from 2017 through 2021. The actual RQ values (y-axis) are omitted from the figure to maintain confidentiality.

Source: SERO, Community ALS.

Engagement and Reliance

Figure 3.4.1.2 is an overall measure of a community’s commercial fishing engagement and reliance and includes the communities with the strongest relationship to the commercial sector for red snapper as depicted in Figure 3.4.1.1. Sanford, Florida is not included because these data are not available for the community. Most communities in Figure 3.4.1.2 would be considered to be highly or moderately engaged in commercial fishing, as several are at or above 1 standard deviation of the mean factor score and most are at or above ½ standard deviation. Titusville, Ormond Beach, and Daytona Beach, Florida show the least amount of engagement in commercial fishing overall. All of the included communities demonstrate low commercial reliance.

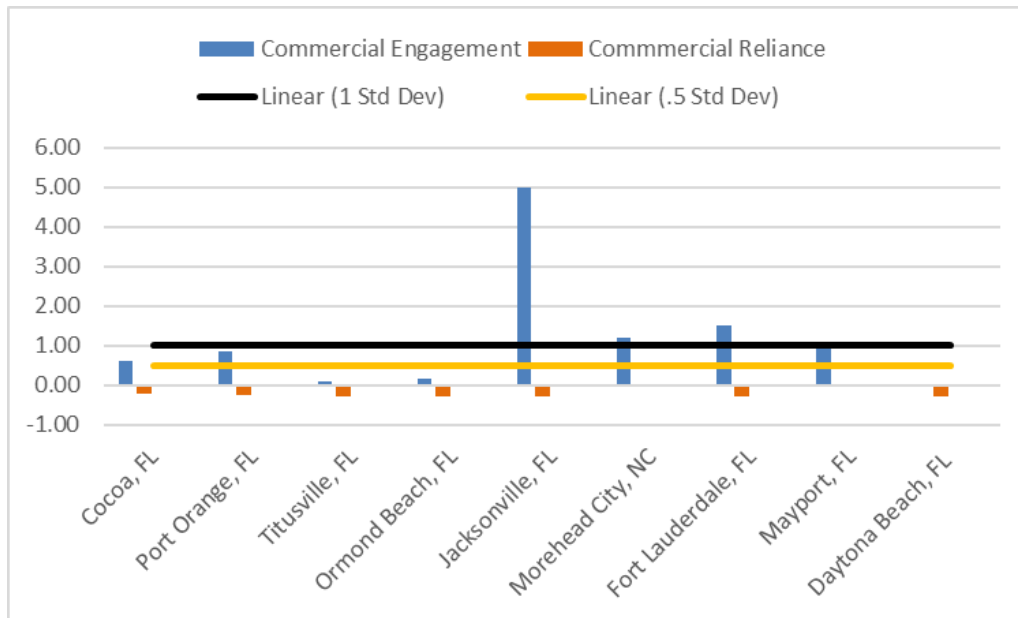


Figure 3.4.1.2. Commercial fishing engagement and reliance for top red snapper communities. Source: SERO, Community Social Vulnerability Indicators Database 2019.

3.4.2. Recreational Sector

Landings by State

The greatest proportion of recreational snapper grouper landings came from waters adjacent to Florida (average of 77.6% from 2017-2021; SEFSC MRIP Data), followed by North Carolina (13.1%), South Carolina (8.1%), and Georgia (1.2%).

Within Florida, the greatest proportion of recreational snapper grouper landings are by private vessels (average of 55.4% from 2017-2021; SEFSC MRIP Data), followed by charter vessels (27.3%), headboats (10.5%), and shore mode (6.7%). Within North Carolina, the greatest proportion of recreational snapper grouper landings are by charter vessels (46.8%), followed by private vessels (29%), headboats (22.9%), and shore mode (1.3%). Within South Carolina, the greatest proportion of recreational snapper grouper landings are by headboats (40.2%), followed by private vessels (26.4%), charter vessels (31.1%), and shore mode (2.2%). And within Georgia, the greatest proportion of recreational snapper grouper landings are by private vessels (68.2%), followed by charter vessels (17.2%), and shore mode (14.6%).

The greatest proportion of recreational red snapper landings came from waters adjacent to Florida (average of 90.7% from 2017-2021; SEFSC MRIP, Headboat, and available State Survey Data), followed by South Carolina (4.5%), Georgia (2.9%), and North Carolina (1.8%).

Within Florida, the greatest proportion of recreational red snapper landings are by private vessels (average of 83% from 2017-2021; SEFSC MRIP, Headboat, and available State Survey Data), followed by charter vessels (8.6%), and headboats (8.3%). Within South Carolina, the greatest proportion of recreational red snapper landings are by private vessels (77.8%), followed by headboats (13.8%), and charter vessels (8.4%). Within Georgia, the majority of recreational red

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snapper landings are by private vessels (85.9%), followed by charter vessels (14.1%). And within North Carolina, the greatest proportion of recreational red snapper landings are by private vessels (54.1%), followed by headboats (23.7%), and charter vessels (22.2%).

Permits

The majority of for-hire snapper grouper permits are issued to individuals in Florida (63.3%), followed by North Carolina (17.2%), South Carolina (8.8%), and Georgia (2.5%, SERO Permits Office, April 8, 2021). Residents of other Gulf states (Alabama, Mississippi, Louisiana, and Texas) also hold a sizable amount of for-hire snapper grouper permits (2.5%). Residents of other states and territories (Arkansas, California, Delaware, Iowa, Illinois, Indiana, Massachusetts, Maryland, Maine, Michigan, Minnesota, Missouri, New Jersey, New York, Ohio, Pennsylvania, Puerto Rico, Rhode Island, and Virginia) also hold for-hire snapper grouper permits.

South Atlantic for-hire snapper grouper permits are held by those with mailing addresses in 429 communities (SERO Permits Office, April 8, 2021). Communities with the most for-hire snapper grouper permits are located in communities in Florida, North Carolina, and South Carolina (Table 3.4.2.1). A large number of communities with the most for-hire snapper grouper permits are located in the Florida Keys (Key West, Marathon, Islamorada, Tavernier, Summerland Key, and Key Largo). The communities with most South Atlantic for-hire snapper grouper permits are Key West (8.4% of for-hire snapper grouper permits), Marathon (3%), and Islamorada, Florida (2.9%).

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Table 3.4.2.1. Top communities by number of South Atlantic for-hire snapper grouper permits.

State	Community	Permits
FL	Key West	136
FL	Marathon	49
FL	Islamorada	47
FL	Tavernier	36
FL	St. Augustine	35
FL	Fort Lauderdale	30
FL	Jacksonville	29
FL	Merritt Island	28
FL	Jupiter	23
NC	Wilmington	23
FL	Summerland Key	22
NC	Hatteras	22
FL	Key Largo	21
FL	Port Orange	19
SC	Charleston	19
FL	Miami	18
SC	Mt. Pleasant	18

Source: SERO Permits Office, April 8, 2021.

Engagement and Reliance

Landings for the recreational sector are not available by species at the community level, making it difficult to identify communities as dependent on recreational fishing for red snapper or snapper group in general. Because limited data are available concerning how communities are engaged and reliant on specific species or species groups in the recreational sector, indices were created using secondary data from permit and infrastructure information for the southeast recreational fishing sector at the community level (Jacob et al. 2013; Jepson and Colburn 2013). Recreational fishing engagement is represented by the number of recreational permits and vessels designated as “recreational” by homeport and owner address. Fishing reliance includes the same variables as fishing engagement, divided by population. Factor scores of both engagement and reliance were plotted by community.

Figure 3.4.2.1 identifies the top communities that are engaged and reliant upon recreational fishing in general. All included communities demonstrate high levels of recreational engagement. Four communities (Islamorada, Florida; Hatteras, North Carolina; Tavernier, Florida; and Manteo, North Carolina) demonstrate high levels of recreational reliance.

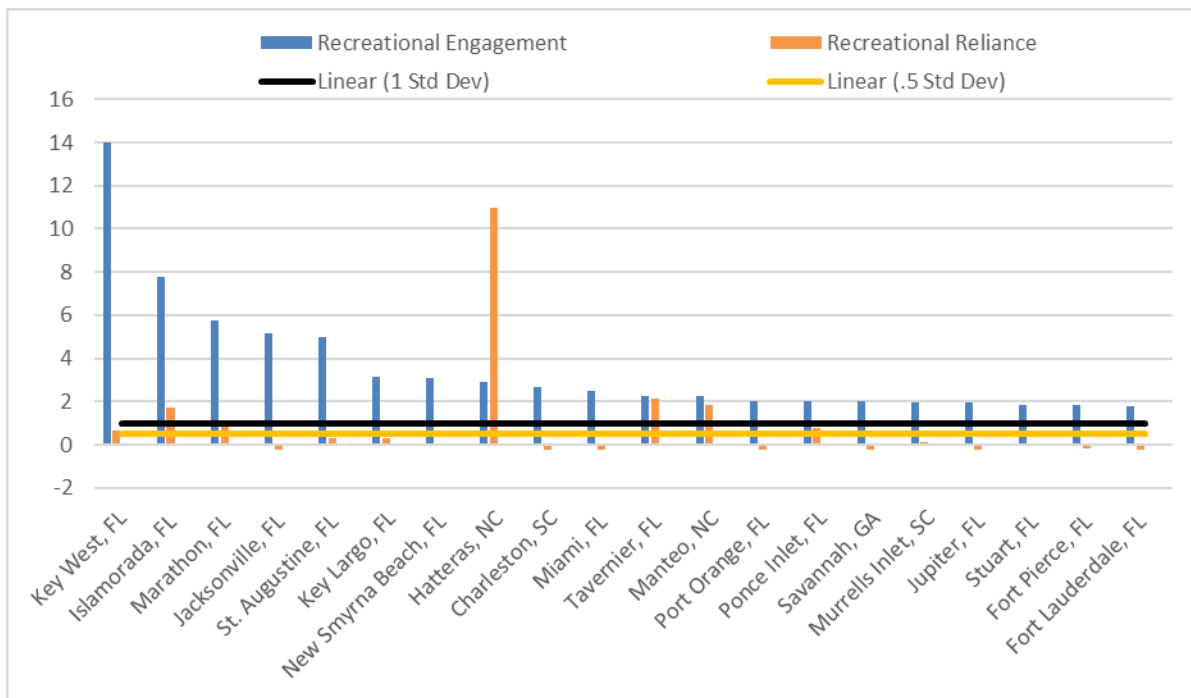


Figure 3.4.2.1. Top 20 communities by recreational fishing engagement and reliance. Source: SERO, Community Social Vulnerability Indicators Database 2019.

The description of fishing activities presented above highlights which communities may be most involved in South Atlantic red snapper and snapper grouper fishing. It is expected that the impacts from the regulatory action in this regulatory amendment, whether positive or negative, will most likely affect those communities identified above.

3.4.3. Environmental Justice, Equity, and Underserved Communities

Federal agencies are required to consider the impacts and/or address the inequalities of their policies on minority populations, low-income populations, disadvantaged communities, and/or underserved communities. These requirements are outlined in the following Executive Orders (E.O.).

E.O. 12898 requires federal agencies conduct their programs, policies, and activities in a manner to ensure individuals or populations are not excluded from participation in, or denied the benefits of, or subjected to discrimination because of their race, color, or national origin. In addition, and specifically with respect to subsistence consumption of fish and wildlife, federal agencies are required to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. The main focus of E.O. 12898 is to consider “the disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories...” This E.O. is generally referred to as environmental justice (EJ).

E.O. 13985 requires federal agencies to recognize and work to redress inequalities in their policies and programs that serve as barriers to equal opportunity, including pursuing a

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comprehensive approach to advancing equity for all, including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality. Federal agencies must assess how programs and policies perpetuate systemic barriers to opportunities and benefits to people of color and other underserved groups in order to equip agencies to develop policies and programs that deliver resources and benefits equitably to all.

E.O. 13985 provides definitions for equity and underserved communities, which expand the definition of a community from being geographically situated, or place-based, as defined through the Magnuson-Stevens Act, to also include communities that share a particular characteristic (e.g., crew of commercial fishing vessels). Equity means the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment, such as Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality. The term “underserved communities” refers to populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life, as exemplified by the list in the preceding definition of “equity.”

E.O. 14008 calls on agencies to make achieving EJ part of their missions “by developing programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts.” Census data are available to examine the status of communities with regard to minorities and low-income populations. These data describe geographically based communities (e.g., Key West, Florida) and are descriptive of the total population, not limited to the fishing components of the community. Information is not available at this time to examine the status of underserved populations engaged in South Atlantic fisheries. To help assess whether EJ concerns may be present within regional place-based communities, a suite of indices were created using census data to examine the social vulnerability of coastal communities within the region. The three indices are poverty, population composition, and personal disruption. The variables included in each of these indices have been identified through the literature as being important components that contribute to a community’s vulnerability. Poverty includes poverty rates for different groups; population composition includes more single female-headed households, households with children under the age of five, minority populations, and those that speak English less than well; and personal disruption includes disruptions such as higher separation rates, higher crime rates, and unemployment. Increased rates in the indicators are signs of populations experiencing vulnerabilities. Again, for those communities that exceed the threshold it would be expected that they would exhibit vulnerabilities to sudden changes or social disruption that might accrue from regulatory change.

Figures 3.4.3.1 and 3.4.3.2 provide social vulnerability rankings for place-based communities identified in Section 3.4 as important to commercial and recreational fishing for red snapper specifically or fishing for snapper grouper in general. Several communities exceed the threshold of one standard deviation above the mean for at least one of the indices (Daytona Beach, Fort Pierce, Hialeah, and Miami, Florida). Two of the communities exceed the threshold for all three

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of the indices (Fort Pierce and Hialeah, Florida). These communities would be the most likely to exhibit vulnerabilities to social or economic disruption resulting from regulatory change.

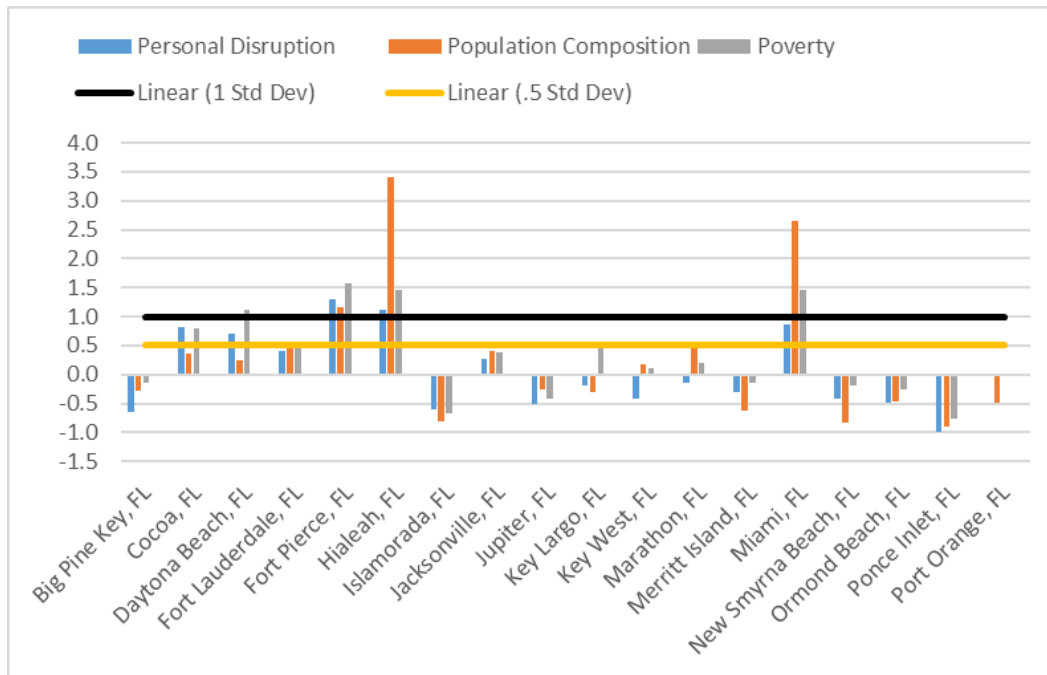


Figure 3.4.3.1. Social vulnerability indices for top commercial and recreational snapper grouper and red snapper communities.

Source: SERO, Community Social Vulnerability Indicators Database 2019.

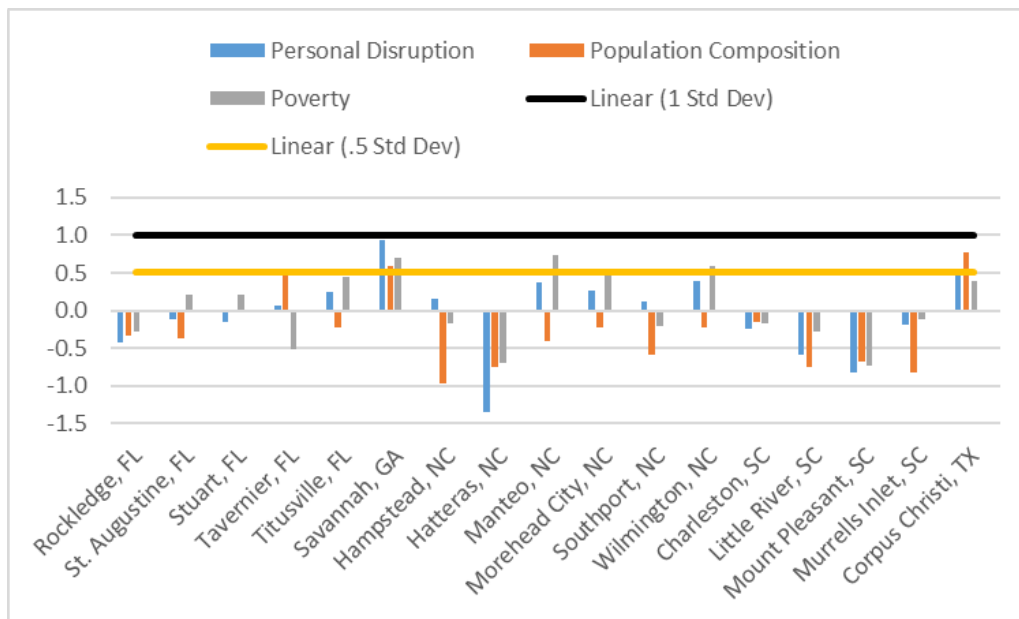


Figure 3.4.3.2. Social vulnerability indices for top commercial and recreational snapper grouper and red snapper communities continued.

Source: SERO, Community Social Vulnerability Indicators Database 2019.

People in these communities may be affected by fishing regulations in two ways: participation and employment. Although the place-based communities identified in Figures 3.4.3.1 and

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3.4.3.2 may have the greatest potential for EJ concerns, complete data are not available on the race and income status for those involved in the local fishing industry (employment), or for their dependence on red snapper and snapper grouper specifically (participation). The potential effects of the actions on place based communities and non-place based communities, such as such as commercial fishermen and recreational stakeholders are discussed in Sections 4.1.3, 4.2.3, and 4.3.3. There are no known populations that rely on the consumption of red snapper for subsistence. Although no EJ issues have been identified, the absence of potential EJ concerns cannot be assumed.

3.5. Administrative Environment

3.5.1. Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Act (16 U.S.C. 1801 et seq.), originally enacted in 1976 as the Fishery Conservation and Management Act. The Magnuson-Stevens Act claims sovereign rights and exclusive fishery management authority over most fishery resources within the EEZ, an area extending 200 nm from the seaward boundary of each of the coastal states, and authority over U.S. anadromous species and continental shelf resources that occur beyond the U.S. EEZ.

Responsibility for federal fishery management decision-making is divided between the U.S. Secretary of Commerce (Secretary) and eight regional fishery management councils that represent the expertise and interests of constituent states. Regional councils are responsible for preparing, monitoring, and revising management plans for fisheries needing management within their jurisdiction. The Secretary is responsible for collecting and providing the data necessary for the councils to prepare fishery management plans and for promulgating regulations to implement proposed plans and amendments after ensuring that management measures are consistent with the Magnuson-Stevens Act and with other applicable laws. In most cases, the Secretary has delegated this authority to NMFS.

The Council is responsible for conservation and management of fishery resources in federal waters of the U.S. South Atlantic. These waters extend from 3 to 200 mi offshore from the seaward boundary of North Carolina, South Carolina, Georgia, and east Florida to Key West. The Council has thirteen voting members: one from NMFS; one each from the state fishery agencies of North Carolina, South Carolina, Georgia, and Florida; and eight public members appointed by the Secretary. On the Council, there are two public members from each of the four South Atlantic States. Non-voting members include representatives of the U.S. Fish and Wildlife Service, U.S. Coast Guard (USCG), State Department, and Atlantic States Marine Fisheries Commission (ASMFC). The Council has adopted procedures whereby the non-voting members serving on the Council Committees have full voting rights at the Committee level but not at the full Council level. The Council also established two voting seats for the Mid-Atlantic Council on the South Atlantic Mackerel Committee. Council members serve three-year terms and are recommended by state governors and appointed by the Secretary from lists of nominees submitted by state governors. Appointed members may serve a maximum of three consecutive terms.

Public interests also are involved in the fishery management process through participation on Advisory Panels and through council meetings, which, with few exceptions for discussing

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personnel and legal matters, are open to the public. The Council uses its Scientific and Statistical SSC to review the data and science being used in assessments and fishery management plans/amendments. In addition, the regulatory process is in accordance with the Administrative Procedure Act, in the form of “notice and comment” rulemaking.

3.5.2. State Fishery Management

The state governments of North Carolina, South Carolina, Georgia, and Florida have the authority to manage fisheries that occur in waters extending three nautical miles from their respective shorelines. North Carolina’s marine fisheries are managed by the Marine Fisheries Division of the North Carolina Department of Environmental Quality. The Marine Resources Division of the South Carolina Department of Natural Resources manages South Carolina’s marine fisheries. Georgia’s marine fisheries are managed by the Coastal Resources Division of the Department of Natural Resources. The Division of Marine Fisheries Management of the Florida Fish and Wildlife Conservation Commission is responsible for managing Florida’s marine fisheries. Each state fishery management agency has a designated seat on the South Atlantic Council. The purpose of state representation at the Council level is to ensure state participation in federal fishery management decision-making and to promote the development of compatible regulations in state and federal waters.

The South Atlantic states are also involved through ASMFC in management of marine fisheries. This commission was created to coordinate state regulations and develop management plans for interstate fisheries. It has significant authority, through the Atlantic Striped Bass Conservation Act and the Atlantic Coastal Fisheries Cooperative Management Act, to compel adoption of complementary state regulations to conserve coastal species. The ASFMC is also represented at the Council but does not have voting authority at the Council level.

NMFS’s State-Federal Fisheries Division is responsible for building cooperative partnerships to strengthen marine fisheries management and conservation at the state, inter-regional, and national levels. This division implements and oversees the distribution of grants for two national (Inter-jurisdictional Fisheries Act and Anadromous Fish Conservation Act) and two regional (Atlantic Coastal Fisheries Cooperative Management Act and Atlantic Striped Bass Conservation Act) programs. Additionally, it works with the ASMFC to develop and implement cooperative State-Federal fisheries regulations.

3.5.3. Enforcement

Both the NMFS Office for Law Enforcement (NOAA/OLE) and the USCG have the authority and the responsibility to enforce Council regulations. NOAA/OLE agents, who specialize in living marine resource violations, provide fisheries expertise and investigative support for the overall fisheries mission. The USCG is a multi-mission agency, which provides at sea patrol services for the fisheries mission.

Neither NOAA/OLE nor the USCG can provide a continuous law enforcement presence in all areas due to the limited resources of NOAA/OLE and the priority tasking of the USCG. To supplement at sea and dockside inspections of fishing vessels, NOAA entered into Cooperative Enforcement Agreements with all but one of the states in the Southeast Region (North Carolina), which granted authority to state officers to enforce the laws for which NOAA/OLE has jurisdiction. In recent years, the level of involvement by the states has increased through Joint Enforcement Agreements, whereby states conduct patrols that focus on federal priorities and, in

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some circumstances, prosecute resultant violators through the state when a state violation has occurred.

The NOAA Office of General Counsel Penalty Policy and Penalty Schedule is available online at <http://www.gc.noaa.gov/enforce-office3.html>.

Chapter 4. Environmental Effects and Comparison of Alternatives

4.1. Action 1. Reduce the acceptable biological catch, total annual catch limit, and sector annual catch limits, and establish an annual optimum yield for South Atlantic red snapper

4.1.1. Biological Effects

The current overfishing limit (OFL) for red snapper is 56,000 fish and the acceptable biological catch (ABC) is 53,000 fish (SEDAR 41; 2017). The current total annual catch limit (ACL) (commercial and recreational ACLs combined) is 42,510 fish (Amendment 43, SAFMC 2017). The total ACL is based on the South Atlantic Fishery Management Council’s (Council) Scientific and Statistical Committee’s (SSC) previous ABC recommendation. The red snapper commercial and recreational sectors are managed independently to constrain their harvest to the respective ACLs. Based on the current sector allocation ratio developed by the Council for red snapper of 28.07 % commercial and 71.93 % recreational, the total ACL is separated into a commercial ACL of 124,815 pounds (lbs) whole weight (ww), and a recreational ACL of 29,656 fish (Amendment 43, SAFMC 2017). In 2021, the SSC recommended new ABC and OFL values (Table 1.5.1) as a result of the latest stock assessment (SEDAR 73, 2021).

Alternative 1 (No Action) would retain the total ACL of 42,510 fish that exceeds the most recent ABC and OFL recommendations of the SSC, and would not end overfishing of red snapper. Potential adverse biological impacts from overfishing (fishing mortality too high) include a decrease in the average age and size structure, decline in recruitment, and reduced stock resilience to environmental perturbations. Overall, **Alternative 1 (No Action)** is not a viable alternative because it would not be based on the best scientific information available (BSIA) and would exceed the ABC recommended by the SSC.

Alternatives*

1 (No Action). The ABC for South Atlantic red snapper is 53,000 fish. The total ACL is 42,510 fish. The commercial sector ACL is 124,815 lbs ww. The recreational sector ACL is 29,656 fish.

2. Reduce the red snapper ABC and set it equal to the most recent recommendation from the SSC. Revise the total ACL and establish an annual OY for red snapper and set them **equal to** the recommended ABC.

3. Reduce the red snapper ABC and set it equal to the most recent recommendation from the SSC. Revise the total ACL and establish an annual OY for red snapper and set them equal to **95%** of the recommended ABC.

4. Reduce the red snapper ABC and set it equal to the most recent recommendation from the SSC. Revise the total ACL and establish an annual OY for red snapper and set them equal to **90%** of the recommended ABC.

5. Reduce the red snapper ABC and set it equal to the most recent recommendation from the ABC. Revise the total ACL and establish an annual OY for red snapper and set them equal to **0 fish**.

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

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Relative to **Alternative 1 (No Action)**, the OY and ACLs in **Alternatives 2 through 5** are based on the SSC’s new OFL and ABC recommendation and are viable alternatives for further analysis (Section 2.1.1).

In general, lower ACLs are expected to result in positive biological effects to the red snapper stock. Over the long term, reducing harvest of red snapper to help improve the age structure of the population would be expected to allow the stock to be less susceptible to adverse environmental conditions that might affect recruitment success. However, lower catch levels than what is currently allowed, would result in a shorter season, as proposed by **Alternatives 2 through 5**. **Alternative 2** would allow the greatest amount of harvest of the action alternatives considered and result in the least biological benefit to the red snapper stock as there would be no buffer between the ABCs and the total ACLs. Biological benefits resulting from **Alternatives 3 and 4** would increase as the buffer increases. **Alternative 5** would result in the most benefits to the stock because the total ACL would be set to zero and all harvest would be prohibited.

Commercial Sector Landings and Predicting Future Season Length

During 2015 and 2016, total removals exceeded the ABC, so the total ACL was set to zero in the following year. Since 2017, except for 2018, the commercial ACL has been met in about two months, resulting in an in-season closure each year (Tables 4.1.1.1 and 4.1.1.2)⁹. Georgia landings were confidential so they were added to the east Florida landings. Commercial landings for South Atlantic red snapper were highest in east Florida and Georgia. During 2018 and 2021, the commercial sector was closed in-season as the ACL was predicted to be met, but was reopened later in the season in order to reach the ACL.

Table 4.1.1.1. South Atlantic red snapper commercial landings in pounds whole weight (lbs ww) from 2017 through 2021 and the percentage of the commercial ACL landed each year.

Year	East FL and GA*	NC	SC	Total landings	ACL	ACL %
2017	75,491	9,803	3,980	89,274	124,815	71.5
2018	106,769	11,628	9,756	128,153	124,815	102.7
2019	108,513	10,074	7,142	125,729	124,815	100.7
2020	115,880	12,307	6,294	134,480	124,815	107.7
2021	103,696	16,178	8,413	128,287	124,815	102.8

Source: SERO Commercial ACL dataset: WH_ACLs_2014-2021_31Aug2022.xlsx.

*Georgia

⁹ In 2017, NMFS allowed limited commercial (and recreational) harvest of red snapper in 2017 by a temporary rule through emergency action pursuant to the Magnuson-Stevens Act ([82 FR 50839](#), November 2, 2017) as a result of new scientific information regarding improvements in the red snapper stock. Amendment 43 to the Snapper Grouper FMP (SAFMC 2018) revised the red snapper commercial and recreational ACLs and allowed for the harvest of red snapper in South Atlantic Federal waters. Additionally, the final rule provided notice of the red snapper commercial season opening date and the opening and closing dates for the recreational season in the South Atlantic for the 2018 fishing year.

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Table 4.1.1.2. Dates when the South Atlantic red snapper commercial sector was open in the years of 2017 through 2021.

Year	Days Open During Season	Number of Open Days
2017	November 2, 2017, to December 31, 2017	60
2018	July 26, 2018, to November 7, 2018, reopened December 5, 2018, to December 15, 2018	114
2019	July 8, 2019, to August 30, 2019	53
2020	July 13, 2020, to September 5, 2020	54
2021	July 12, 2021, to September 14, 2021, reopened November 2, 2021, to November 6, 2021	68

Predicted landings for the various commercial ACLs were analyzed by using the average catch rates by month (Appendix F). Amendment 28 to the Snapper Grouper FMP (SAFMC 2013) established that the start of the commercial season begins on the second Monday in July each year. The second Monday in July could occur on the range of dates from as early as July 8 to as late as July 12. Since the start date could change from year to year, a start date of July 10 was used for the analysis since it falls in the middle of July 8 through 12. **Alternatives 2, 3, and 4** would implement annual ACLs from 2023 through 2027 until modified. The analysis was simplified by only using the highest and lowest ACL in each of **Alternatives 2, 3, and 4**. **Alternative 5** sets the commercial ACL at zero beginning in 2023 so it was not included in the season length analysis. The estimated closure dates and total number of days the fishery would be open for the proposed commercial ACLs under **Alternatives 2-4** are shown in Table 4.1.1.3. Since the ACLs start at their lowest value beginning in 2023 for **Alternatives 2-4**, and increase until 2027, the number of days the fishery is predicted to be open increases.

Table 4.1.1.3. Estimated closure dates for the various commercial ACLs. The closure dates were determined from assuming the commercial sector opens on July 10.

Alternative	Fishing year	Commercial ACL (lbs ww)	Closure Date	Total number of open days
Alternative 1	-	124,815	11-Sep	63
Alternative 2 Low	2023	77,016	16-Aug	37
Alternative 2 High	2027+	99,021	27-Aug	48
Alternative 3 Low	2023	73,166	14-Aug	35
Alternative 3 High	2027+	94,070	25-Aug	46
Alternative 4 Low	2023	69,315	12-Aug	33
Alternative 4 High	2027+	89,119	22-Aug	43

Recreational Sector Landings and Predicting Future Season Length

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Concurrently with the commercial sector, the recreational ACL was set to zero during 2015 and 2016. Since 2017, the majority of red snapper has been landed in east Florida (Table 4.1.1.4). The red snapper recreational sector was open six days in November and three days in December during 2017, and for six days during August in 2018 (Table 4.1.1.5). The length of the red snapper recreational season has continued to decline to 5 days in 2019, 4 days in 2020, and 3 days in 2021, as a result of the recreational ACL being projected to be reached sooner in each year (Table 4.1.1.5). Recreational landings of South Atlantic red snapper have exceeded the recreational ACL since 2018.

Table 4.1.1.4. Recreational landings (numbers of fish) of South Atlantic red snapper from 2017 through 2021 and the percentage of the recreational ACL landed each year.

Fishing year	Georgia	East Florida	North Carolina	South Carolina	Total landings	ACL	ACL %
2017	84	13,193	194	799	14,270	29,656	48.1
2018	405	37,367	472	223	38,467	29,656	129.7
2019	2,243	44,113	150	3,168	49,674	29,656	167.5
2020	1,891	36,363	678	3,840	42,772	29,656	144.2
2021	807	36,053	1,877	332	39,069	29,656	131.7

Table 4.1.1.5. Dates when the South Atlantic red snapper recreational sector was open in 2017 through 2021.

Year	Days Open During Season	Number of Open Days
2017	November 3, 4, 5, 10, 11, and 12, 2017; reopened December 8, 9, 10, 2017.	9
2018	August 10, 11, 12, 17, 18, and 19, 2018	6
2019	July 12, 13, 14, 19 and 20, 2019	5
2020	July 10, 11, 12, and 17, 2020	4
2021	July 9, 10, and 11, 2021	3

Due to potential changes to stock size over time and the limited historical data from July, the season length analysis under proposed recreational catch limits only uses July 2019, 2020, and 2021 data as a proxy to predict future landings and the recreational season (Appendix F). During the closed recreational red snapper season each year (January through June, August through December) in 2019, 2020, and 2021, there was an average total harvest of 600 red snapper. Therefore, the analysis assumes 600 red snapper harvested in the recreational sector during the closed season from January through June, and from August through December. Because the red snapper recreational fishing season opens the first Friday in July and NMFS projects the length of the recreational fishing season, future landings were only predicted for July. Future July recreational landings were estimated by calculating the red snapper recreational daily catch rate from the average of 2019 through 2021 (Appendix F, Table F-4), and then applying the catch rate to the number of weekend days (Friday, Saturday, and Sunday) for July. Predicted landings assumed a uniform distribution of landings for each day in July.

The estimated closure dates and total number of days the fishery would be open for the various recreational ACLs are shown in Table 4.1.1.6. Since the ACLs start at their lowest value beginning in 2023, and increase until 2027, the number of days that the fishery is predicted to be open increases for each alternative. For **Alternatives 2, 3, and 4**, the red snapper ACL is predicted to be met in one to two days (Table 4.1.6).

Table 4.1.1.6. Estimated number of days the recreational season would be open for the various recreational ACLs. The number of days was generated by dividing the recreational ACL by the average catch rate (11,217 fish per day).

Alternative	Fishing Year	Recreational ACL (Numbers of Fish)	Number of Open Days
Alternative 1		29,656	3
Alternative 2 Low	2023	19,119	2
Alternative 2 High	2027+	27,119	2
Alternative 3 Low	2023	17,719	2
Alternative 3 High	2027+	25,319	2
Alternative 4 Low	2023	16,319	1
Alternative 4 High	2027+	23,519	2

Expected Effects to Bycatch and Discards

Red snapper can be found in 33-623 feet of water, and release mortality rates for red snapper range from 22-23%¹⁰, depending on the sector (Appendix G, Table G-9). Release mortality rates for the snapper grouper fishery are also widely variable depending on species and fishing mode, ranging from 12.5% for gray triggerfish and yellowtail snapper, to 41% for vermilion snapper, and 41-53% for red porgy. Red snapper are often harvested incidentally when fishing for other snapper grouper species, such as vermilion snapper, gray triggerfish, red porgy, and black sea bass (Appendix G, Tables G-2 and G-10). Across most of the snapper grouper species, including red snapper, the magnitude of private mode discards is much higher compared to the headboat or charter modes (Appendix G, Table G-4). Recreational discards of several snapper grouper species are higher than the landings for certain modes of fishing (Appendix G, Table G-5). Black sea bass, gag, red snapper, red grouper, and tomtate discards are much higher than their landings across all modes. Red snapper recreational discards to landings ratios are 5,270% in the headboat component, 1,177% in the charter component, and 859% in the private recreational component (Appendix G, Table G-5).

In general, harvest prohibitions have adverse effects to the red snapper stock when the fish don't survive after being returned to the water. Of the four discard codes, "out of season" regulations was the most common reason selected for discarded red snapper based on self-reported

¹⁰ A discard mortality rate of 0.2 implies that, of every five fish released, one fish would die.

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commercial discards (Appendix G, Table G-3). When compared to **Alternative 1 (No Action)**, decreasing the total and sector ACLs under **Alternatives 2** through **5** would allow for less fish to be harvested. Discards of red snapper could increase with shorter seasons because incidentally caught fish would need to be discarded rather than kept, which has indirect negative effects to the red snapper stock. **Alternative 5** could result in the most discards since all red snapper that are incidentally caught while fishing for other species would need to be returned to the water. The SEFSC provided information to the Council during their December 2022 meeting that showed that a large reduction of discard mortalities is needed to end overfishing¹¹; this action will unlikely reduce discards to that level. Therefore, **Alternatives 2** through **5** could still represent a catch level that would continue to result in overfishing unless discards are considerably reduced in addition to a reduction to the total ACL.

Conversely, there is potential that discards could also decrease during a shorter season. During the open seasons, there is likely more effort and targeting of red snapper on fishing trips. Since there is a one-fish bag limit for the recreational sector during the open season, and no minimum size limit for either sector, fishermen have also reported “highgrading,” which means discarding of smaller fish as larger fish are caught. By reducing the recreational season from three days to one day, or for a one or more weeks during the commercial season, there would be less trips targeting red snapper in particular, which could reduce discards.

Overall, there is a lack of data to determine if the net effect will be a decrease or an increase in discard; therefore, potential biological effects to discards can not be depicted quantitatively from a shorter season since there could be an increase, or a decrease, in discards. Since ACLs and AMs are already in place for red snapper, and this action would only reduce the ACLs, substantial changes in fishing effort or behavior and a reduction in discards is not expected as a result of this action; additionally, the proposed reduced ACLs under this action would not be expected to result in any biological effects, positive or negative, on co-occurring species (refer to BPA in Appendix G).

4.1.2. Economic Effects

In general, ACLs that allow for more fish to be landed can result in increased positive economic effects if harvest increases without notable effects on the stock of a species. The ACL does not directly impact the fishery for a species unless harvest changes, fishing behavior changes, or the ACL is exceeded, thereby potentially triggering AMs such as harvest closures or other restrictive measure. In the case of red snapper, the revised ACLs being considered in **Alternative 2** through **5** would be constraining on harvest and are projected to reduce landings of red snapper for both the commercial and recreational sectors. As such, a reduction in direct economic benefits would be expected from each of these alternatives. **Alternative 1 (No Action)** provides the highest ACL and thus the highest potential economic benefits but this alternative is not viable since it does not implement BSIA resulting from the most recent catch level recommendation from the SSC. Among the viable alternatives being considered in **Action 1**, **Alternative 2** would allow for the highest potential landings and thus the highest potential economic benefits followed by **Alternative 3**, **Alternative 4**, and **Alternative 5**.

¹¹ <https://safmc.net/events/september-2022-council-meeting/>

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4.1.3. Social Effects

The ACL for any stock does not directly affect resource users unless the ACL is met or exceeded, in which case AMs that restrict or close harvest could negatively impact the commercial, for-hire, and private recreational sectors. AMs can have significant direct and indirect social effects because, when triggered, they can restrict harvest in the current season or subsequent seasons. This can induce other indirect effects through changes in fishing behavior or business operations that could have long-term social effects, such as increased pressure on another species, or fishermen having to stop fishing altogether due to regulatory closures. However, restrictions on harvest contribute to sustainable management goals, and are expected to be beneficial to fishermen and communities in the long term.

Under **Alternative 2** through **Alternative 5**, the ACL for red snapper would be based on the most recent stock assessment. Adjustments in an ACL based on updated information are necessary to ensure harvest remains sustainable and fishermen can continue to have access to the resource over time. **Alternative 1 (No Action)** would not update the red snapper ACL based on current information and would not provide the long-term social benefits associated with sustainable harvest. The most recent stock assessment indicated that red snapper was overfished and undergoing overfishing. Not ending overfishing for red snapper would result in long-term negative social effects such as fishermen having to change their behavior and business operations to focus on alternative species. Red snapper is a popular fishery, particularly for the recreational sector, and overfishing and subsequent lower catches, may affect how often private and for-hire anglers choose to go fishing offshore.

Alternative 5 would set the ACL for red snapper equal to zero, closing red snapper to commercial and recreational harvest until modified. The absence of a fishing season for red snapper in past years was highly controversial with negative effects on private recreational fishermen, for-hire businesses, and commercial vessels, especially when compared to the benefits to fishermen during the allowed open seasons.

Commercial and recreational landings are estimated to vary year by year, but projections show that both the commercial and recreational sectors are likely to experience closures and short seasons, respectively, under all proposed alternatives except **Alternative 5**, which would close the fishery year-round. (Appendix F). There would likely be some negative effects on private recreational fishermen and commercial and for-hire businesses that target red snapper. However, commercial and recreational fishing for red snapper has been heavily restricted due to the stocks overfished status. As a result, fishermen have likely adjusted their businesses to rely on alternative species. An additional concern with the short seasons likely under **Alternatives 2** through **4** is safety at sea. Stakeholders have expressed frustration with crowded boat ramps and reefs during the limited recreational red snapper season, making conditions hazardous for boaters. Additionally, the limited season may result in anglers choosing to fish in dangerous conditions. In general, a higher ACL would lengthen the fishing season and result in the lowest level of negative effects (Tables 4.1.1.3 and 4.1.1.6).

In addition to the social effects associated with restricted access to the red snapper resource for several years, **Alternatives 1 (No Action)** through **5** are expected to result in increased distrust in science and management due to inconsistency in what fishermen see on the water versus the

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scientific models. Finally, when compared to **Alternative 5**, **Alternatives 2-4** provide the social benefit of improved data collection during a fishing season. Improved data collection ultimately leads to more accurate management of the stock and long-term benefits to fishermen in the form of consistent access to the resource.

Social effects on the commercial sector from Action 1 most likely to be felt in the communities of Sanford, Florida and Cocoa, Florida, which together account of 30% of red snapper landings (Section 3.4). Morehead City, North Carolina, may also be affected as it also experiences comparatively high landings of red snapper and is highly engaged in commercial fishing. Communities in Florida are likely to see the biggest effects from restrictions to the recreational sector as 90.7% of red snapper landings occur within the state (followed by South Carolina, Georgia, and North Carolina). The Florida Keys sees a high level of recreational engagement and reliance, particularly Islamorada and Tavernier, Florida. The towns of Hatteras and Manteo, North Carolina, also experience a high reliance on recreational fishing and may experience negative social effects because of the decreased ACL for red snapper proposed in **Alternatives 2 through 5**.

Among the action alternatives, **Alternative 2** would be the most beneficial for fishermen, followed by **Alternative 3**, **Alternative 4**, and **Alternative 5**. As stated in above, **Alternative 1 (No Action)** is not a viable alternative because it is not based on the best scientific information available.

4.1.4. Administrative Effects

The commercial red snapper season closes when the commercial sector ACL is met or projected to be met. The end of the recreational red snapper season is projected and announced before the start of the recreational season. The NMFS Regional Administrator has the authority to delay the opening of red snapper fishing seasons in the event of a tropical storm or hurricane affecting the Council's area of authority. Reducing the total ACL and sector ACLs for red snapper under **Alternatives 2 through 5** would not have substantial effects on the administrative environment, outside of the requisite public notices to announce the season, in-season closures, and potential re-openings. However, in general, the lower the ACL, the more likely it is to be met (if no additional harvest restrictions are implemented), and the more likely an AM would be triggered. Since it is expected that both the commercial and recreational ACL would be met and an in-season closure is expected to occur under **Alternatives 2 through 4**, the administrative effects are likely going to be minimal and the same across these alternatives compared to the status quo. **Alternative 5** would require development and dissemination of outreach and education materials for fishery participants and law enforcement and an in-season announcement of the closed season for both sectors.

4.2. Action 2. Prohibit the use of electrically or hydraulically-powered reels to fish recreationally for snapper grouper species

NOTE: The draft Alternatives 3 and 4 and their sub-alternatives for Actions 2 and 3 were requested by the Council at their September 2022 meeting, and they are included in this draft framework amendment for the purposes of comparing options; however, they will be reviewed by the Council and during the public hearings during the December 2022 meeting, and may be revised or removed at that time.

4.2.1. Biological Effects

Biological effects are expected to vary among Action 2 alternatives. Generally, the greater the area in which electrically or hydraulically-powered reels are prohibited, the greater the biological benefits to snapper grouper stocks. Prohibition of these types of reels is expected to reduce catch efficiency by slowing how quickly fish can be brought to the surface and onboard a vessel. Slowed catch rates would be expected to provide biological benefits by reducing overall catch of snapper grouper fishes, which would reduce harvest and release mortality. By reducing overall catch of snapper grouper species (including red snapper), this action will contribute to ending overfishing of red snapper by lowering the fishing mortality applied to the stock.

The efficiency of reducing catch by prohibiting electrically or hydraulically-powered reels (resulting in the effects described below) would be heavily dependent on angler compliance with the regulations. Law enforcement's role in enforcing compliance is described in Section 4.2.4. Additionally, compliance is encouraged through education and outreach efforts, which are described in Appendix H.

Due to limited data and lack of research investigating the differences in catch rates and usage of electrically or hydraulically-powered reels, potential biological effects of prohibiting these types of reels and reducing snapper grouper mortality cannot be depicted quantitatively. Biological

Alternatives*

- 1 (No Action). There is no prohibition on the use of electrically or hydraulically powered reels by the recreational sector to fish for snapper grouper species.
2. Electrically or hydraulically-powered reels may not be used by the recreational sector to fish for snapper grouper species.
3. Prohibit the use of electrically or hydraulically-powered reels by the recreational sector to fish for snapper grouper species in the exclusive economic zone off:
 - 3a. North Carolina
 - 3b. South Carolina
 - 3c. Georgia
 - 3d. North Florida (counties include Nassau, Duval, Saint Johns, Flagler, Volusia)
 - 3e. Central Florida (counties include Brevard, Indian River, St Lucie)
 - 3f. South Florida (counties include Martin, Palm Beach, Broward, Miami-Dade, Monroe)
4. Prohibit the use of electrically or hydraulically-powered reels by the recreational sector while fishing for snapper grouper species in the exclusive economic zone in an area associated with the following depths:
 - 4a. less than 100 feet
 - 4b. 100 feet to 200 feet
 - 4c. 200 feet to 300 feet
 - 4d. Greater than 300 feet

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

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effects would be greatest in parts of the snapper grouper fishery that are more dependent on electrically or hydraulically-powered reels.

In October 2022, the Snapper Grouper Advisory Panel provided comments about where electrically or hydraulically-powered reels are most common in the snapper grouper fishery. The general impression from the AP is that use of electric reels is not widespread throughout the snapper grouper fishery. When electric reels are used, it is typically when fishing for deep water snapper grouper species (e.g., tilefish, snowy grouper, yellowedge grouper). One AP member suggested that less than 10% of anglers use electrically or hydraulically-powered reels. An AP member also noted that most bottom-fishing tackle shops do not typically sell electric reels.

Based on the AP's comments, the infrequent current usage of electrically and hydraulically-powered reels is expected to limit the impact of a prohibition of these reels on reducing catch, discards, and mortality of snapper grouper species. In addition, many of the deep water fish that these reels are used to target come from depths where barotrauma effects can be most severe, greatly reducing the chance of survival after release. Because of this, anglers are less likely to release deep water species in search of larger fish.

Comments from the Snapper Grouper Advisory Panel and the public indicated that biological benefits of reducing catch efficiency through slower reeling times may be offset to some extent by increasing the likelihood of shark depredation. Given slower reeling times for larger fish or fish coming up from greater depths, species that fit these characteristics could be expected to have reduced biological benefits relative to other species due to greater risk of shark depredation. Additionally, fishes that are found in areas where shark depredation is more common could also be expected to have reduced biological benefits relative to fishes outside of these areas.

Overall, the most biologically beneficial alternative would depend on the true extent of current usage and shark depredation in the South Atlantic snapper grouper fishery. If biological benefits of prohibiting electrically and hydraulically-powered reels are greater than the negative effects of potentially increased shark depredation, **Alternative 2** would be expected to provide the greatest overall biological benefits to snapper grouper stocks, with varying levels of benefits for individual stocks and in specific areas of the region. If negative biological effects from potentially increased shark depredation due to prohibition of electrically or hydraulically-powered reels are greater than biological benefits from slowed catch rates caused by prohibition of those reels, then **Alternative 1** would be expected to provide the greatest biological benefit by avoiding a net increase in fishing mortality. Effects of each alternative are expected to vary for individual stocks based on species distributions, differences catch rates, release rates, and discard mortality rates (including localized differences to specific areas of the region).

If prohibition of electrically and hydraulically-powered reels provides net benefits, **Alternatives 3 and 4** would be expected to have greater biological benefits than **Alternative 1 (No Action)** and less biological benefits than **Alternative 2**, although the extent of those benefits would depend on the sub-alternatives selected. Due to the lack of quantitative information related to this management action and potentially confounding factors of different current usage of electrically and hydraulically-powered reels and shark depredation in different areas and depths, biological benefits of sub-alternatives under **Alternatives 3 and 4** cannot be directly compared. However, with similar reasoning of a cumulative effect of a larger area prohibiting these types of

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reels having greater biological benefits, selection of sub-alternatives under **Alternatives 3** and **4** that would apply to a larger area would be expected to have greater biological benefits than selection of sub-alternatives that would have a smaller applicable area.

4.2.2. Economic Effects

Restricting the use of electrically or hydraulically-powered reels to fish for snapper grouper species would likely result in reduced landings and thus reduced economic benefits from these landings. The extent to which these restrictions will apply will vary based on the alternative considered. **Alternative 1 (No Action)** would maintain full use of electrically or hydraulically powered reels, thus resulting in no change in economic benefits for the recreational sector.

Alternative 2 would be the most restrictive of the alternatives being considered and may result in the largest reduction in short-term economic benefits to the recreational sector. Under this alternative, access to several deepwater species, such as golden tilefish, blueline tilefish, or snowy grouper, would be limited due to the depths at which they commonly occur. Electrically or hydraulically-powered reels may be needed to access these species since manually powered gear may not be readily feasible or desirable for use in this deepwater fishery. As such, landings of these species would likely decrease along with the associated net economic benefits derived from these landings. Additionally, there would be a reduction in landings of other snapper grouper species occurring in shallower waters, which would further decrease short-term economic benefits. The extent to which electrically or hydraulically-powered reels are used in the recreational snapper grouper fishery is unknown, thus these economic benefits cannot be quantified with available data.

The anticipated short-term economic effects of **Alternative 3** and **Alternative 4** are similar to those described for **Alternative 2** but will be comparatively lower and will depend on the area or depth chosen in the sub-alternatives (**Sub-Alternative 3a** through **3f** and **Sub-Alternative 4a** through **4d**). **Sub-alternatives 4a** through **4c** would notably mitigate the negative economic effects described for **Alternative 2** in regard to deepwater species since electrically or hydraulically-powered reels would still be allowed to fish for these species at depths where they are commonly found (i.e. greater than 300 feet).

There may be long-term economic benefits from restricting the use of electrically or hydraulically-powered reels for the recreational sector if there are improvements in the condition of stocks of snapper grouper species resulting from decreased mortality occurring due to lower numbers of fish that are discarded or harvested. Such benefits will be highly variable across species and dependent on the level of reductions in harvest or discards that may occur from implementing **Alternatives 2** through **4**.

4.2.3. Social Effects

Some fishermen prefer to be able to choose the type of gear they use when targeting snapper grouper species, preferring the most efficient gear types. While other fishermen may be comfortable using less efficient gear if they believe it is in the best interest of the resource. If the Council chooses to set standards for the type of reel that may be used in the recreational sector, as proposed under **Alternatives 2-4**, some fishermen may agree that it is in the interest of

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conserving the species, while others may object to the loss of personal choice, especially if they felt they would experience a reduction in catch rates. However, if prohibiting the use of electrically or hydraulically powered reels decreases encounter rate of non-target species, as envisioned, it is expected to contribute to the sustainability of harvest and the health of snapper grouper stocks and provide for increased long-term social benefits. It is worth noting that the Americans with Disabilities Act of 1990 would allow those with disabilities to continue using hydraulic or electric reels if needed.

The extent of social effects related to **Alternative 2** and **Alternative 3** would depend on which sub-alternatives are chosen as preferred and the extent that electric reels are used in each area. As described in Section 3.4, majority of for-hire permits are located on vessels indicating a homeport in the state of Florida, followed by North Carolina, South Carolina, and Georgia. As a result, **Sub-alternative 3d**, **Sub-alternative 3e**, and **Sub-alternative 3f** would impact the largest number of for-hire businesses, followed by **Sub-alternative 3a**, **Sub-alternative 2b**, and **Sub-alternative 3c**. Communities in the Florida Keys (**Sub-alternative 2f**) would likely experience the largest social effects in the state of Florida as most for-hire permits are found in Key West, Marathon, and Islamorada, Florida. Additionally, communities in the Florida Keys (Islamorada and Tavernier) are highly engaged in and reliant upon recreational fishing activities.

In addition, the extent of social effects relying on vessel homeport, how prohibiting electrically or hydraulically powered reels will affect recreational fishing will depend on what species of snapper grouper is being targeted on a given trip and at what depth productive fishing grounds can be found. **Sub-alternative 4d** is likely to affect fishing activities for deep water species while **Sub-alternative 4a** is likely to affect shallow water species with **Sub-alternative 4b** and **Sub-alternative 4c** falling in-between.

No quantitative data exists to determine how prevalent the use of electrically or hydraulically powered reels is in the snapper grouper fishery. Additionally, the decision to fish with an electrically or hydraulically powered reel likely depends on a variety of factors including historical and familiar fishing techniques, location of the fishing activity and desired species. As a result, ranking of the alternatives under Action 2 is difficult and likely specific to individual anglers and their preferred fishing practices.

4.2.4. Administrative Effects

All alternatives in Action 2, excluding **Alternative 1 (No Action)**, would create adverse administrative effects since it would require extensive coordination between the NMFS Office of Sustainable Fisheries, the Office of Law Enforcement, and the public. Several forms of educational and outreach materials would need to be made available to fishery participants, which would create a relatively short-term impact on the administrative environment. Fishery bulletins and the NMFS web site would be used to notify fishery participants of the new gear requirements. However, enforcement of this action's implementing regulations would create adverse administrative effects in the short and long-term. Adverse administrative effects will occur in the short term as enforcement personnel are trained on requirements. Long term effects would result from these alternatives since it would be difficult to enforce whether anglers are or are not targeting other species that do not prohibit reel type. Additionally, enforceability of **Alternatives 3** and **4**, and their sub-alternatives, will be mostly limited to at-sea boardings.

4.3. Action 3. Prohibit the use of more than one hook per line for the snapper grouper recreational sector

NOTE: The draft Alternatives 3 and 4 and their sub-alternatives for Actions 2 and 3 were requested by the Council at their September 2022 meeting, and they are included in this draft framework amendment for the purposes of comparing options; however, they will be reviewed by the Council and during the public hearings during the December 2022 meeting, and may be revised or removed at that time.

4.3.1. Biological Effects

Biological effects are expected to vary among Action 3 alternatives. Generally, the greater the area in which multi-hook rigs are prohibited for the recreational sector, the greater the biological benefits to snapper grouper stocks. Prohibition of more than one hook per line is expected to reduce catch efficiency by requiring more drops to catch a given number of fish. Slowed catch rates would be expected to provide biological benefits by reducing overall catch of snapper grouper fishes, which would reduce harvest and release mortality. By reducing overall catch of snapper grouper species (including red snapper), this action will contribute to ending overfishing of red snapper by lowering the fishing mortality applied to the stock.

The efficiency of reducing catch by prohibiting multiple hooks per line (resulting in the effects described below) would be heavily dependent on angler compliance with the regulations. Law enforcement's role in enforcing compliance is described in Section 4.2.3. Additionally, compliance is encouraged through education and outreach efforts, which are described in Appendix H.

Differences in catch efficiency have been investigated by comparison studies of catch rates for single-hook and multi-hook rigs. *****Results will be added after project completion*****

Information directly investigating usage of more than one hook per line in the South Atlantic snapper grouper recreational fishery is lacking. Therefore, usage information must be evaluated

Alternatives*

- 1 (No Action). There is no prohibition on the use of more than one hook per line by the recreational sector while fishing for snapper grouper species.
2. Prohibit the use of more than one hook per line for the recreational sector while fishing for snapper grouper species.
3. Prohibit the use of more than one hook per line for the recreational sector while fishing for snapper grouper species in the exclusive economic zone off:
 - 3a. North Carolina
 - 3b. South Carolina
 - 3c. Georgia
 - 3d. North Florida (counties include Nassau, Duval, Saint Johns, Flagler, Volusia)
 - 3e. Central Florida (counties include Brevard, Indian River, St Lucie)
 - 3f. South Florida (counties include Martin, Palm Beach, Broward, Miami-Dade, Monroe)
4. Prohibit the use of more than one hook per line for the recreational sector while fishing for snapper grouper species in the exclusive economic zone in an area associated with depth:
 - 4a. less than 100 feet
 - 4b. 100 feet to 200 feet
 - 4c. 200 feet to 300 feet
 - 4d. Greater than 300 feet

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

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qualitatively or indirectly to estimate the potential biological benefits of prohibiting multi-hook rigs. In October 2022, the AP provided input on the current usage of multiple hooks per line in the snapper grouper recreational sector. Generally, more than one hook is used in shallower water and when targeting smaller species or a wider variety of species. Biological benefits would be greatest for parts of the recreational fishery that currently use more than one hook per line. Based on AP feedback, this would include the recreational fishery off Ponce Inlet, FL, and off South Carolina when targeting species such as vermilion snapper, black sea bass, or triggerfish.

Overall, **Alternative 2** would be expected to provide the greatest overall biological benefits to snapper grouper stocks, with varying levels of benefits for individual stocks and in specific areas of the region. **Alternative 2** would have the greatest benefit due to overall reduced catch rates for snapper grouper species throughout the region. **Alternatives 3** and **4** would be expected to have greater biological benefits than **Alternative 1 (No Action)**, although the extent of those benefits would depend on the sub-alternatives selected. Multiple sub-alternatives under **Alternatives 3** and **4** may be selected. Due to the lack of quantitative information related to use of multi-hook rigs in the South Atlantic snapper grouper recreational fishery, biological benefits of sub-alternatives under **Alternatives 3** and **4** cannot be directly compared. However, with similar reasoning of a cumulative effect of a larger area prohibiting multi-hook rigs having greater biological benefits, selection of sub-alternatives under **Alternatives 3** and **4** that would apply to a larger area would be expected to have greater biological benefits than selection of sub-alternatives that would have a smaller applicable area.

4.3.2. Economic Effects

Prohibiting the use of more than one hook to fish for snapper grouper species would likely result in reduced landings and thus reduced economic benefits from these landings. The extent to which these restrictions will apply will vary based on the alternative considered as well as how prevalent the use of multiple hooks is in a given fishery or area. **Alternative 1 (No Action)** would maintain the ability to use multiple hooks thus resulting in no change in economic benefits.

Alternative 2 would be the most restrictive of the alternatives being considered and may result in the largest reduction in short-term economic benefits to the recreational sector. Under this alternative, landings of many snapper grouper species would likely decrease along with the associated net economic benefits derived from these landings. The anticipated short-term economic effects of **Alternative 3** and **Alternative 4** are similar to those described for **Alternative 2** but will be comparatively lower and will depend on the area or depth chosen in the sub-alternatives (**Sub-Alternative 3a** through **3f** and **Sub-Alternative 4a** through **4d**).

There may be long-term economic benefits from prohibiting the use of more than one hook to fish for snapper grouper species for the recreational sector if there are improvements in the condition of stocks of these species resulting from decreased mortality occurring due to lower numbers of fish that are discarded or harvested. Such benefits will be highly variable across species and dependent on the level of reductions in harvest or discards that may occur from **Alternatives 2** through **4**.

4.3.3. Social Effects

Some fishermen prefer to be able to choose the type and number of hooks they use when they fish, preferring the number of hooks that is most efficient. While other fishermen may be comfortable using fewer hooks on a line. If the Council chooses to set standards for the number of hooks per line in the recreational sector, as proposed under **Alternatives 2-4**, some fishermen may agree that it is in the interest of conserving the species, while others may object to the loss of personal choice, especially if they feel they would experience a reduction in catch rates. However, if the required use one hook per line for the recreational sector lowers the encounter rate of non-target species, as envisioned, it is expected to contribute to the sustainability of harvest and the health of snapper grouper stocks and provide for increased long-term social benefits.

The extent of social effects related to **Alternative 2** and **Alternative 3** would depend on which sub-alternatives are chosen as preferred. As described in Section 3.4, majority of for-hire permits are located on vessels indicating a homeport in the state of Florida, followed by North Carolina, South Carolina, and Georgia. As a result, **Sub-alternative 3d**, **Sub-alternative 3e**, and **Sub-alternative 3f** would impact the largest number of for-hire businesses, followed by **Sub-alternative 3a**, **Sub-alternative 2b**, and **Sub-alternative 3c**. Communities in the Florida Keys (**Sub-alternative 2f**) would likely experience the largest social effects in the state of Florida has most for-hire permits are found in Key West, Marathon, and Islamorada, Florida. Additionally, communities in the Florida Keys (Islamorada and Tavernier) are highly engaged in and reliant upon recreational fishing activities.

In addition, the extent of social effects relying on vessel homeport, how fishing with a single hook per line will affect recreational fishing will depend on what species of snapper grouper is being targeted on a given trip and at what depth productive fishing grounds can be found. **Sub-alternative 4d** is likely to affect fishing activities for deep water species while **Sub-alternative 4a** is likely to affect shallow water species with **Sub-alternative 4b** and **Sub-alternative 4c** falling in-between.

The decision to fish with single vs. multiple hooks likely depends on a variety of factors including historical and familiar fishing techniques, location of the fishing activity and desired species. As a result, ranking of the alternatives under Action 3 is difficult and likely specific to individual anglers and their preferred fishing practices.

4.3.4. Administrative Effects

All alternatives in Action 2, excluding **Alternative 1 (No Action)**, would create adverse administrative effects since it would require extensive coordination between the NMFS Office of Sustainable Fisheries, the Office of Law Enforcement, and the public. Several forms of educational and outreach materials would need to be made available to fishery participants, which would create a relatively short-term impact on the administrative environment. Fishery bulletins and the NMFS web site would be used to notify fishery participants of the new gear requirements. However, enforcement of this action's implementing regulations would create adverse administrative effects in the short and long-term. Adverse administrative effects will

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occur in the short term as enforcement personnel are trained on requirements. Long term effects would result from these alternatives since it would be difficult to enforce whether anglers are or are not targeting other species that do not prohibit certain gear types. Additionally, enforceability of **Alternatives 3 and 4** and their sub-alternatives will be mostly limited to at-sea boardings.

Chapter 5. South Atlantic Council's Rationale for the Preferred Alternatives

5.1. Action 1. Reduce the acceptable biological catch, total annual catch limit, and sector annual catch limits, and establish an annual optimum yield for South Atlantic red snapper

5.1.1. Snapper Grouper Advisory Panel (AP) Comments and Recommendations

5.1.2. Law Enforcement AP Comments and Recommendations

5.1.3. Scientific and Statistical Committee (SSC) Comments and Recommendations

5.1.4. Public Comments and Recommendations

5.1.5. South Atlantic Council's Conclusion

5.1.6. How is this Action Addressing the Vision Blueprint for the Snapper Grouper Fishery?

Alternatives

1 (No Action). The ABC for South Atlantic red snapper is 53,000 fish. The total ACL is 42,510 fish. The commercial sector ACL is 124,815 lbs ww. The recreational sector ACL is 29,656 fish.

2. Reduce the red snapper ABC and set it equal to the most recent recommendation from the SSC. Revise the total ACL and establish an annual OY for red snapper and set them **equal to** the recommended ABC.

3. Reduce the red snapper ABC and set it equal to the most recent recommendation from the SSC. Revise the total ACL and establish an annual OY for red snapper and set them equal to **95%** of the recommended ABC.

4. Reduce the red snapper ABC and set it equal to the most recent recommendation from the SSC. Revise the total ACL and establish an annual OY for red snapper and set them equal to **90%** of the recommended ABC.

5. Reduce the red snapper ABC and set it equal to the most recent recommendation from the ABC. Revise the total ACL and establish an annual OY for red snapper and set them equal to **0 fish**.

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

5.2. Action 2. Prohibit the use of electrically or hydraulically-powered reels to fish recreationally for snapper grouper species

5.2.1. Snapper Grouper AP Comments and Recommendations

5.2.2. Law Enforcement AP Comments and Recommendations

See comments in **Section 5.1.2.**

5.2.3. SSC Comments and Recommendations

See comments in **Section 5.1.3.**

5.2.4. Public Comments and Recommendations

5.2.5. South Atlantic Council’s Conclusion

5.2.6. How is this Action Addressing the Vision Blueprint for the Snapper Grouper Fishery?

Alternatives*

1 (No Action). There is no prohibition on the use of electrically or hydraulically powered reels by the recreational sector to fish for snapper grouper species.

2. Electrically or hydraulically-powered reels may not be used by the recreational sector to fish for snapper grouper species.

3. Prohibit the use of electrically or hydraulically-powered reels by the recreational sector to fish for snapper grouper species in the exclusive economic zone off:

3a. North Carolina

3b. South Carolina

3c. Georgia

3d. North Florida (counties include Nassau, Duval, Saint Johns, Flagler, Volusia)

3e. Central Florida (counties include Brevard, Indian River, St Lucie)

3f. South Florida (counties include Martin, Palm Beach, Broward, Miami-Dade, Monroe)

4. Prohibit the use of electrically or hydraulically-powered reels by the recreational sector while fishing for snapper grouper species in the exclusive economic zone in an area associated with the following depths:

4a. less than 100 feet

4b. 100 feet to 200 feet

4c. 200 feet to 300 feet

4d. Greater than 300 feet

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

5.3. Action 3. Prohibit the use of more than one hook per line for the snapper grouper recreational sector

5.3.1. Snapper Grouper AP Comments and Recommendations

5.3.2. Law Enforcement AP Comments and Recommendations

5.3.3. SSC Comments and Recommendations

5.3.4. Public Comments and Recommendations

5.3.5. South Atlantic Council's Conclusion

5.3.6. How is this Action Addressing the Vision Blueprint for the Snapper Grouper Fishery?

Alternatives*

1 (No Action). There is no prohibition on the use of more than one hook per line by the recreational sector while fishing for snapper grouper species.

2. Prohibit the use of more than one hook per line for the recreational sector while fishing for snapper grouper species.

3. Prohibit the use of more than one hook per line for the recreational sector while fishing for snapper grouper species in the exclusive economic zone off:

3a. North Carolina

3b. South Carolina

3c. Georgia

3d. North Florida (counties include Nassau, Duval, Saint Johns, Flagler, Volusia)

3e. Central Florida (counties include Brevard, Indian River, St Lucie)

3f. South Florida (counties include Martin, Palm Beach, Broward, Miami-Dade, Monroe)

4. Prohibit the use of more than one hook per line for the recreational sector while fishing for snapper grouper species in the exclusive economic zone in an area associated with depth:

4a. less than 100 feet

4b. 100 feet to 200 feet

4c. 200 feet to 300 feet

4d. Greater than 300 feet

*See Chapter 2 for detailed language of alternatives. Preferred indicated in bold.

Chapter 6. Cumulative Effects

6.1. Affected Area

The immediate impact area would be the federal 200-mile limit of the Atlantic off the coasts of North Carolina, South Carolina, Georgia, and east Florida to Key West (South Atlantic exclusive economic zone [EEZ]), which is also the South Atlantic Fishery Management Council’s (Council) area of jurisdiction. In light of the available information, the extent of the boundaries would depend upon the degree of fish immigration/emigration and larval transport, whichever has the greatest geographical range. The ranges of affected species are described in Volume II of the Fishery Ecosystem Plan.¹² For the proposed actions found in Regulatory Amendment 35 to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP), the cumulative effects analysis includes an analysis of data from 2017 through the present.

6.2. Past, Present, and Reasonably Foreseeable Actions Impacting the Affected Area

Past Actions

Amendment 36 to the Snapper Grouper FMP, effective on July 31, 2017, was implemented to establish new spawning special management zones to protect spawning areas for snapper grouper species.

Amendment 37 to the Snapper Grouper FMP, effective on August 24, 2017, modified the hogfish fishery management unit in response to genetically different stocks along the South Atlantic, specified fishing levels for the two stocks, established a rebuilding plan for the Florida Keys/East Florida stock, and established or revised management measures for both hogfish stocks such as size limits, recreational bag limits, and commercial trip limits.

Amendment 43 to the Snapper Grouper FMP, effective on July 26, 2017, specified recreational and commercial annual catch limits (ACL) for red snapper beginning in 2018.

Abbreviated Framework 1 to the Snapper Grouper FMP, effective on August 27, 2018, was implemented to address overfishing of red grouper, and reduced the commercial and recreational ACLs for red grouper in the South Atlantic EEZ.

Abbreviated Framework 2 to the Snapper Grouper FMP, effective on May 9, 2019, revised fishing levels for black sea bass and vermilion snapper in response to the latest stock assessments for those species in the South Atlantic.

Amendment 42 to the Snapper Grouper FMP, effective on January 8, 2020, added three newly approved sea turtle release devices and updated the regulations to simplify and clarify the

¹² <http://safmc.net/ecosystem-management/fishery-ecosystem-plan/>

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specifications for other release gear requirements. The new devices and updates provide more options to fulfill the requirements for sea turtle release gear on board vessels with commercial and charter/for-hire snapper grouper permits in the South Atlantic. The amendment also streamlines the procedure to implement newly approved devices and handling procedures in the future.

Vision Blueprint Commercial Regulatory Amendment 27 to the Snapper Grouper FMP, effective on February 26, 2020, addresses specific action items in the 2016-2020 Vision Blueprint for the commercial sector of the snapper grouper fishery. The framework amendment revised commercial regulations for blueline tilefish, snowy grouper, greater amberjack, red pogy, vermilion snapper, almaco jack, Other Jacks Complex (lesser amberjack, almaco jack, and banded rudderfish), queen snapper, silk snapper, blackfin snapper, and gray triggerfish. Actions include modifying fishing seasons, trip limits, and minimum size limits.

Regulatory Amendment 30 to the Snapper Grouper FMP, effective on March 9, 2020, revised the rebuilding plan for red grouper, extended the annual spawning closure for that species off North and South Carolina, and established a commercial trip limit.

Regulatory Amendment 26 (Vision Blueprint Regulatory Amendment 26) to the Snapper Grouper FMP, effective on March 30, 2020, addresses specific action items in the 2016-2020 Vision Blueprint for the recreational sector of the snapper grouper fishery. The framework amendment modified the 20-fish aggregate bag limits, and minimum size limits for certain species.

Regulatory Amendment 29 to the Snapper Grouper FMP, effective July 15, 2020, modified gear requirements for South Atlantic snapper grouper species. Actions included requirements for descending and venting devices, and modifications to requirements for circle hooks and powerheads, in order to improve survivorship of released fish.

Abbreviated Framework 3 to the Snapper Grouper FMP, effective August 17, 2020, revised fishing levels for blueline tilefish in the South Atlantic region.

Regulatory Amendment 33 to the Snapper Grouper FMP, effective August 17, 2020, removed the requirement that if projections indicate the South Atlantic red snapper season (commercial or recreational) would be three days or fewer, the commercial and/or recreational seasons would not open for that fishing year. If this requirement is removed, red snapper harvest could be open for either recreational or commercial harvest for fewer than four days.

Amendment 39 to the Snapper Grouper FMP, effective September 1, 2020 (corrected January 4, 2021), modified reporting requirements for federally-permitted charter vessels and headboats in the snapper grouper, dolphin wahoo, and coastal migratory pelagics (mackerel and cobia) fisheries.

Regulatory Amendment 34 to the Snapper Grouper FMP, effective May 3, 2021, created 34 special management zones around artificial reefs off North Carolina and South Carolina.

Present Actions

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Amendment 44 to the Snapper Grouper FMP will address the results of the latest stock assessment for the yellowtail snapper stock in the southeast. Comprehensive Acceptable Biological Catch (ABC) Control Rule Amendment (Amendment 45 to the Snapper Grouper FMP) would modify the ABC control rule, specify an approach for determining the acceptable risk of overfishing and the probability of rebuilding success for overfished stocks, allow phase-in of ABC changes, and allow carry-over of unharvested catch. This amendment will continue being developed in 2021.

Amendment 50 to the Snapper Grouper FMP would address the results of the latest stock assessment for the red porgy stock in the South Atlantic region. Red porgy are overfished and overfishing is occurring. The Council is required to establish a rebuilding plan by June 2022 and adjust catch levels and management measures to end overfishing.

Amendment 51 to the Snapper Grouper FMP would address the results of the latest stock assessment for the snowy grouper stock in the South Atlantic region. Snowy grouper was determined to be overfished and undergoing overfishing.

Amendment 52 to the Snapper Grouper FMP would respond to the latest stock assessment for golden tilefish (SEDAR 66). Golden tilefish are not overfished and overfishing is not occurring. The amendment would also respond to increased recreational effort on blueline tilefish by adjusting the recreational bag limit for blueline tilefish and modifying recreational accountability measures.

Amendment 53 to the Snapper Grouper FMP would address the results of the latest stock assessment for the gag stock in the South Atlantic region. Gag was determined to be overfished and undergoing overfishing.

Reasonably Foreseeable Future Actions

Amendment 46 to the Snapper Grouper FMP proposes actions to focus on private recreational permit requirements and reporting.

Regulatory Amendment 31 to the Snapper Grouper FMP could include actions to revise recreational accountability measures to allow more flexibility in managing recreational fisheries. Development of this framework amendment is currently on hold.

Expected Impacts from Past, Present, and Future Actions

The intent of Regulatory Amendment 35 is to modify management of South Atlantic red snapper. Actions include revising annual catch limits (ACL), and gear modifications for the recreational sector. Development of Regulatory Amendment 35 is a response to the most recent stock assessment for South Atlantic red snapper (SEDAR 73 2021). The proposed actions are not expected to result in significant cumulative adverse biological or socio-economic effects (see Chapter 4). In recent years, participants in the snapper grouper fishery and associated businesses have experienced some negative economic and social impacts due to changes in ACLs and early closures during the fishing years. Factors such as distance to fishing grounds, weather, and water temperature affect availability of species to the recreational fleets in different parts of the Council's jurisdiction. The proposed actions could result in increased regulatory discards of red snapper. However, the proposed actions would reduce overfishing and support the current rebuilding plan in place.

When combined with the impacts of past, present, and future actions affecting the snapper grouper fishery, minor cumulative impacts are likely to accrue. For example, there could be beneficial cumulative effects from the actions in this amendment, in addition to future proposed actions to reduce overfishing of snapper grouper species, require the use of descending devices, and reducing bycatch. Also, there may be cumulative socio-economic effects by promoting access to the fishery which would improve recreational fishing opportunities and benefits to associated businesses and communities; however, the actions in this amendment are not expected to result in significant cumulative adverse biological or socio-economic effects to the snapper grouper fishery when combined with the impacts of past, present, and future actions (see Chapter 4).

6.3. Consideration of Climate Change and Other Non-Fishery Related Issues

Climate Change

Global climate changes could have significant effects on Atlantic fisheries, though the extent of these effects on the dolphin and wahoo, snapper grouper, and golden crab fisheries is not known at this time. The Environmental Protection Agency’s climate change webpage (<https://www.epa.gov/climate-indicators/marine-species-distribution>), and NOAA’s Office of Science and Technology climate webpage (<https://www.fisheries.noaa.gov/topic/climate>), provides background information on climate change, including indicators which measure or anticipate effects on oceans, weather and climate, ecosystems, health and society, and greenhouse gases. The United Nations Intergovernmental Panel on Climate Change’s Sixth Assessment Report (February 28, 2022), U.S. Global Change Research Program (USGCRP)’s Fourth Climate Assessment (2018), and the Ecosystem Status Report for the U.S. South Atlantic Region (Craig et al. 2021) also provide a compilation of scientific information on climate change. Those findings are summarized below.

Ocean acidification, or a decrease in surface ocean pH due to absorption of anthropogenic carbon dioxide emissions, affects the chemistry and temperature of the water. Increased thermal stratification alters ocean circulation patterns, and causes a loss of sea ice, sea level rise, increased wave height and frequency, reduced upwelling, and changes in precipitation and wind patterns. Changes in coastal and marine ecosystems can influence organism metabolism and alter ecological processes such as productivity, species interactions, migration, range and distribution, larval and juvenile survival, prey availability, and susceptibility to predators. The “center of biomass,” a geographical representation of each species’ weight distribution, is being used to identify the shifting of fish populations. Warming sea temperature trends in the southeast have been documented, and animals must migrate to cooler waters, if possible, if water temperatures exceed survivable ranges (Needham et al. 2012). Rising water temperatures, ocean acidification, retreating arctic sea ice, sea level rise, high-tide flooding, coastal erosion, higher storm surge, and heavier precipitation events are projected to continue, putting ocean and marine species at risk, decreasing the productivity of certain fisheries, and threatening communities that rely on marine ecosystems for livelihoods and recreation (USGCRP 2018). Harvesting and habitat changes also cause geographic population shifts. Changes in water temperatures may also affect the distribution of native and exotic species, allowing invasive species to establish communities in areas they may not have been able to survive previously. The numerous changes

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to the marine ecosystem may cause an increased risk of disease in marine biota. An increase in the occurrence and intensity of toxic algae blooms will negatively influence the productivity of keystone animals, such as corals, and critical coastal ecosystems such as wetlands, estuaries, and coral reefs (Kennedy et al. 2002; IPCC 2022). Free et al. (2019) investigated the impacts of historical warming on marine fisheries production and found that climate change is altering habitats for marine fishes and invertebrates, but the net effect of these changes on potential food production is unknown.

Climate driven movement of fish stocks is causing commercial, small-scale, artisanal, and recreational fishing activities to shift poleward and diversify harvests (IPCC 2022). In the South Atlantic Region, species richness and abundance of offshore hard bottom reef fishes have generally declined over time while richness and abundance of demersal fishes in soft sediment habitats on the nearshore shelf have increased. Potential explanations for these patterns include changes in harvest (directed and bycatch), trophic interactions, and environment effects on recruitment (Craig et al. 2021). Climate change may impact dolphin and wahoo, snapper grouper species, and golden crab in the future, but the level of impacts cannot be quantified at this time, nor is the time frame known in which these impacts will occur. Public comments stating the lack of large dolphin in the Florida Keys may have to do with the fish moving out of the area in search of suitable temperature and food availability. Studies have shown that seasonal abundance of dolphin along the east coast of the U.S. and Gulf of Mexico is heavily influenced by sea surface temperature and distance to temperature fronts, chlorophyll-*a* concentration, and *Sargassum* mats (Kleisner 2009; Farrell et al. 2014; Merten et al. 2014).

Patterns from stock assessments in the South Atlantic Region indicate biomass of most assessed species generally show declines from the 1970s through the 1990s with some species showing signs of recovery beginning in the early to mid-2000s. Recruitment of a number of snapper-grouper species has declined since the early 2010s whereas recruitment of Red Snapper and some pelagic species has increased in recent years (Craig et al. 2021). In the near term, it is unlikely that the actions in Amendment 51 would compound or exacerbate the ongoing effects of climate change on dolphin and wahoo, snapper grouper species, and golden crab.

Weather Variables

Hurricane season is from June 1 to November 30, and accounts for 97% of all tropical activity affecting the Atlantic basin. These storms, although unpredictable in their annual occurrence, can devastate areas when they occur. Although these effects may be temporary, those fishing-related businesses whose profitability is marginal may go out of business if a hurricane strikes.

6.4. Overall Impacts Expected from Past, Present, and Future Actions

The proposed management actions are summarized in Chapter 2 of this document. Detailed discussions of the magnitude and significance of the impacts of the alternatives on the human environment appear in Chapter 4 of this document. None of the impacts of the actions in this framework amendment, in combination with past, present, and future actions have been determined to be significant. Although several other management actions, in addition to this framework amendment, are expected to affect snapper grouper species, any additive effects, beneficial and adverse, are not expected to result in a significant level of cumulative impacts.

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The proposed actions would not adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places as these are not in the South Atlantic EEZ. These actions are not likely to result in direct, indirect, or cumulative effects to unique areas, such as significant scientific, cultural, or historical resources, park land, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas as the proposed action is not expected to substantially increase fishing effort or the spatial and/or temporal distribution of current fishing effort within the South Atlantic region. The U.S. Monitor, Gray's Reef, and Florida Keys National Marine Sanctuaries are within the boundaries of the South Atlantic EEZ. The proposed actions are not likely to cause loss or destruction of these national marine sanctuaries because the actions are not expected to result in appreciable changes to current fishing practices. Additionally, the proposed actions are not likely to change the way in which the snapper grouper fishery is prosecuted; therefore, the actions are not expected to result in adverse impacts on health or human safety beyond the status quo.

6.5. Monitoring and Mitigation

Fishery-independent and fishery-dependent data comprise a significant portion of information used in stock assessments. Fishery-independent data are being collected through the Southeast Fishery Information Survey and the Marine Resources Monitoring Assessment and Prediction Program. The effects of the proposed actions are, and would continue to be, monitored through collection of recreational landings data by all the four states in the South Atlantic Region (Florida, Georgia, South Carolina, and North Carolina). The National Marine Fisheries Service would continue to monitor and collect information on snapper grouper species for stock assessments and stock assessment updates, life history studies, economic and social analyses, and other scientific observations. The proposed actions relate to the harvest of indigenous species in the Atlantic, and the activities/regulations being altered do not introduce non-indigenous species and are not reasonably expected to facilitate the spread of such species through depressing the populations of native species. Additionally, these alternatives do not propose any activity, such as increased ballast water discharge from foreign vessels, which is associated with the introduction or spread on non-indigenous species

Chapter 7. List of Interdisciplinary Plan Team (IPT) Members

Mike Schmidtke	SAFMC	IPT Lead/Fishery Scientist
Myra Brouwer	SAFMC	Deputy Director for Management
Chip Collier	SAFMC	Deputy Director for Science and Statistics
John Hadley	SAFMC	Economist
Christina Wiegand	SAFMC	Social Scientist
Roger Pugliese	SAFMC	Senior Fishery Biologist
Nick Smillie	SAFMC	Digital Media and Communications Specialist
Mary Vara	SERO/SF	IPT Lead/Fishery Biologist
Rick DeVictor	SERO/SF	South Atlantic Branch Chief
Nikhil Mehta	SERO/SF	Fishery Biologist
Frank Helies	SERO/SF	Fishery Biologist
Scott Sandorf	SERO/SF	Technical Writer and Editor
Michael Larkin	SERO/SF	Data Analyst
Mike Travis	SERO/SF	Socio-economic Branch Chief
Adam Stemle	SERO/SF	Economist
Christina Package-Ward	SERO/SF	Social Scientist
Jennifer Lee	SERO/PR	Biologist
David Dale	SERO/Habitat	Regional Essential Fish Habitat Coordinator
Monica Smit-Brunello	NOAA GC	General Counsel
Sean Meehan	SERO/Directorate	Recreational Fisheries Coordinator
Manny Antoneras	SERO/OLE	Assistant Director
Matt Walia	SERO/OLE	Compliance Liaison
Kyle Shertzer	SEFSC	Biologist
Scott Crosson	SEFSC	Economist

NOAA=National Oceanic and Atmospheric Administration, NMFS = National Marine Fisheries Service, SERO = Southeast Regional Office, SF = Sustainable Fisheries Division, PR = Protected Resources Division, HC = Habitat Conservation Division, SEFSC=Southeast Fisheries Science Center, GC = General Counsel

Chapter 8. Agencies and Persons Consulted

Responsible Agencies

South Atlantic Fishery Management Council (Administrative Lead)
4055 Faber Place Drive, Suite 201
N. Charleston, South Carolina 29405
843-571-4366/ 866-SAFMC-10 (TEL)
843-769-4520 (FAX)
www.safmc.net

NMFS, Southeast Region
263 13th Avenue South
St. Petersburg, Florida 33701
727- 824-5301 (TEL)
727-824-5320 (FAX)

List of Agencies, Organizations, and Persons Consulted

SAFMC Law Enforcement Advisory Panel
SAFMC Snapper Grouper Advisory Panel
SAFMC Scientific and Statistical Committee
North Carolina Coastal Zone Management Program
South Carolina Coastal Zone Management Program
Georgia Coastal Zone Management Program
Florida Coastal Zone Management Program
Florida Fish and Wildlife Conservation Commission
Georgia Department of Natural Resources
South Carolina Department of Natural Resources
North Carolina Division of Marine Fisheries
North Carolina Sea Grant
South Carolina Sea Grant
Georgia Sea Grant
Florida Sea Grant
Atlantic States Marine Fisheries Commission
National Marine Fisheries Service

- Washington Office
- Office of Ecology and Conservation
- Southeast Regional Office
- Southeast Fisheries Science Center

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Appendix A. Other Applicable Law

A.1. Administrative Procedure Act (APA)

All federal rulemaking is governed under the provisions of the APA (5 U.S.C. Subchapter II), which establishes a “notice and comment” procedure to enable public participation in the rulemaking process. Among other things under the APA, the National Marine Fisheries Service (NMFS) is required to publish notification of proposed rules in the *Federal Register* and to solicit, consider and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day wait period from the time a final rule is published until it takes effect, with some exceptions. Regulatory Amendment 35 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 35) complies with the provisions of the APA through the South Atlantic Fishery Management Council’s (Council) extensive use of public meetings, requests for comments and consideration of comments. The proposed rule associated with this regulatory amendment will have a request for public comments, which complies with the APA, and upon publication of the final rule, unless the rule falls within an APA exception, there will be a 30-day wait period before the regulations are effective.

A.2. Information Quality Act (IQA)

The IQA (Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-443)) which took effect October 1, 2002, directed the Office of Management and Budget (OMB) to issue government-wide guidelines that “provide policy and procedural guidelines to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information disseminated by federal agencies.” OMB directed each federal agency to issue its own guidelines, establish administrative mechanisms allowing affected persons to seek and obtain correction of information that does not comply with OMB guidelines, and report periodically to OMB on the number and nature of complaints. The NOAA Section 515 Information Quality Guidelines require a series of actions for each new information product subject to the IQA. Regulatory Amendment 35 uses the best scientific information available and made a broad presentation thereof. Therefore, this document is in compliance with the IQA.

A.3. Coastal Zone Management Act (CZMA)

Section 307(c)(1) of the federal CZMA of 1972 requires that all federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. While it is the goal of the Council to have management measures that complement those of the states, federal and state administrative procedures vary and regulatory changes are unlikely to be fully instituted at the same time. The Council believes the actions in this plan amendment are consistent to the maximum extent practicable with the Coastal Zone Management Plans of Florida, Georgia, South Carolina, and North Carolina.

Pursuant to Section 307 of the CZMA, this determination will be submitted to the responsible state agencies who administer the approved Coastal Zone Management Programs in the States of Florida, South Carolina, Georgia, and North Carolina.

A.4. Executive Order 12612: Federalism

Executive Order (E.O.) 12612 requires agencies to be guided by the fundamental federalism principles when formulating and implementing policies that have federalism implications. The purpose of the Order is to guarantee the division of governmental responsibilities between the federal government and the states, as intended by the framers of the Constitution. No federalism issues have been identified relative to the actions proposed in this document and associated regulations. Therefore, preparation of a Federalism assessment under E.O. 12612 is not necessary.

A.5. Executive Order 12962: Recreational Fisheries

E.O. 12962 requires federal agencies, in cooperation with states and tribes, to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities through a variety of methods. Additionally, the Order establishes a seven-member National Recreational Fisheries Coordination Council responsible for, among other things, ensuring that social and economic values of healthy aquatic systems that support recreational fisheries are considered by federal agencies in the course of their actions, sharing the latest resource information and management technologies, and reducing duplicative and cost-inefficient programs among federal agencies involved in conserving or managing recreational fisheries. The National Recreational Fisheries Coordination Council also is responsible for developing, in cooperation with federal agencies, states and tribes, a Recreational Fishery Resource Conservation Plan to include a five-year agenda. Finally, the Order requires NMFS and the U.S. Fish and Wildlife Service to develop a joint agency policy for administering the ESA.

The alternatives considered in this document are consistent with the directives of E.O. 12962.

A.6. Executive Order 13089: Coral Reef Protection

E.O. 13089, signed by President William Clinton on June 11, 1998, recognizes the ecological, social, and economic values provided by the Nation's coral reefs and ensures that federal agencies are protecting these ecosystems. More specifically, the Order requires federal agencies to identify actions that may harm U.S. coral reef ecosystems, to utilize their program and authorities to protect and enhance the conditions of such ecosystems, and to ensure that their actions do not degrade the condition of the coral reef ecosystem.

The alternatives considered in this document are consistent with the directives of E.O. 13089.

A.7. Executive Order 13158: Marine Protected Areas (MPAs)

E.O. 13158 was signed on May 26, 2000, to strengthen the protection of U.S. ocean and coastal resources through the use of MPAs. The E.O. defined MPAs as “any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein.” It directs federal agencies to work closely with state, local and non-governmental partners to create a comprehensive network of MPAs “representing diverse U.S. marine ecosystems, and the Nation’s natural and cultural resources.”

The alternatives considered in this document are consistent with the directives of E.O. 13158.

A.8. National Marine Sanctuaries Act (NMSA)

Under the NMSA (also known as Title III of the Marine Protection, Research and Sanctuaries Act of 1972), as amended, the U.S. Secretary of Commerce is authorized to designate National Marine Sanctuaries to protect distinctive natural and cultural resources whose protection and beneficial use requires comprehensive planning and management. The National Marine Sanctuary Program is administered by the Sanctuaries and Reserves Division of NOAA. The NMSA provides authority for comprehensive and coordinated conservation and management of these marine areas. The National Marine Sanctuary Program currently comprises 13 sanctuaries around the country, including sites in American Samoa and Hawaii. These sites include significant coral reef and kelp forest habitats, and breeding and feeding grounds of whales, sea lions, sharks, and sea turtles. The three sanctuaries in the South Atlantic exclusive economic zone are the USS Monitor, Gray’s Reef, and Florida Keys National Marine Sanctuaries.

The alternatives considered in this document are not expected to have any adverse impacts on the resources managed by the National Marine Sanctuaries.

A.9. Paperwork Reduction Act (PRA)

The purpose of the PRA is to minimize the burden on the public. The PRA is intended to ensure that the information collected under the proposed action is needed and is collected in an efficient manner (44 U.S.C. 3501 (1)). The authority to manage information collection and record keeping requirements is vested with the Director of the Office of Management and Budget (OMB). This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications. The PRA requires NMFS to obtain approval from the OMB before requesting most types of fishery information from the public. Actions in this document are not expected to affect PRA.

A.10. Small Business Act (SBA)

Enacted in 1953, the SBA requires that agencies assist and protect small-business interests to the extent possible to preserve free competitive enterprise. The objectives of the SBA are to foster

business ownership by individuals who are both socially and economically disadvantaged; and to promote the competitive viability of such firms by providing business development assistance including, but not limited to, management and technical assistance, access to capital and other forms of financial assistance, business training, and counseling, and access to sole source and limited competition federal contract opportunities, to help firms achieve competitive viability. Because most businesses associated with fishing are considered small businesses, NMFS, in implementing regulations, must make an assessment of how those regulations will affect small businesses.

A.11. Public Law 99-659: Vessel Safety

Public Law 99-659 amended the Magnuson-Stevens Fishery Conservation and Management Act to require that an FMP or FMP amendment must consider, and may provide for, temporary adjustments (after consultation with the U.S. Coast Guard and persons utilizing the fishery) regarding access to a fishery for vessels that would be otherwise prevented from participating in the fishery because of safety concerns related to weather or to other ocean conditions. No vessel would be forced to participate in South Atlantic fisheries under adverse weather or ocean conditions as a result of the imposition of management regulations proposed in this amendment. No concerns have been raised by South Atlantic fishermen or by the U.S. Coast Guard that the proposed management measures directly or indirectly pose a hazard to crew or vessel safety under adverse weather or ocean conditions.

DRAFT

Appendix B. Regulatory Impact Review

DRAFT

Appendix C. Regulatory Flexibility Analysis

Appendix D. Essential Fish Habitat and Move to Ecosystem Based Management

I. EFH and EFH-HAPC Designations and Cooperative Habitat Policy Development and Protection

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires federal fishery management Councils and the National Marine Fisheries Service (NMFS) to designate essential fish habitat (EFH) for species managed under federal fishery management plans (FMP). Federal regulations that implement the EFH program encourage fishery management Councils and NMFS also to designate subsets of EFH to highlight priority areas within EFH for conservation and management. These subsets of EFH are called EFH-Habitat Areas of Particular Concern (EFH-HAPCs or HAPCs) and are designated based on ecological importance, susceptibility to human-induced environmental degradation, susceptibility to stress from development, or rarity of the habitat type. Information supporting EFH and EFH-HAPC designations was updated (pursuant to the EFH Final Rule) in Fishery Ecosystem Plan (FEP) II.

a. South Atlantic Council EFH User Guide

The [EFH Users Guide](#) developed during the FEP II development process is available through the FEP II Dashboard and provides a comprehensive list of the designations of EFH and EFH-HAPCs for all species managed by the South Atlantic Fishery Management Council (South Atlantic Council) and the clarifications identified during FEP II development. As noted above, additional detailed information supporting the EFH designations appears in FEP, FEP II, and in individual FMPs, and general information on the EFH provisions of the Magnuson-Stevens Act and its implementing regulations (50 CFR 900 [Subparts J](#) and [K](#)). These sources should be reviewed for information on the components of EFH assessments, steps to EFH consultations, and other aspects of EFH program operation.

b. South Atlantic Council EFH Policy and EFH Policy Statements

Policy for Protection and Restoration of EFH

South Atlantic Council Habitat and Environmental Protection Policy

In recognizing that species are dependent on the quantity and quality of their essential habitats, it is the policy of the South Atlantic Council to protect, restore, and develop habitats upon which fisheries species depend; to increase the extent of their distribution and abundance; and to improve their productive capacity for the benefit of present and future generations. For purposes of this policy, “habitat” is defined as the physical, chemical, and biological parameters that are necessary for continued productivity of the species that is being managed. The objectives of the South Atlantic Council policy will be accomplished through the recommendation of no net loss or significant environmental degradation of existing habitat. A long-term objective is to support and promote a net-gain of fisheries habitat through the restoration and rehabilitation of the productive capacity of habitats that

have been degraded, and the creation and development of productive habitats where increased fishery production is probable. The South Atlantic Council will pursue these goals at state, Federal, and local levels. The South Atlantic Council shall assume an aggressive role in the protection and enhancement of habitats important to fishery species and shall actively enter Federal decision-making processes where proposed actions may otherwise compromise the productivity of fishery resources of concern to the South Atlantic Council.

South Atlantic Council EFH Policy Statements

Considerations to Reduce or Eliminate the Impacts of Non-Fishing Activities on EFH

In addition to implementing regulations to protect habitat from degradation due to fishing activities, the South Atlantic Council in cooperation with NMFS, actively comments on non-fishing projects or policies that may impact fish habitat. The South Atlantic Council established a Habitat Protection and Ecosystem Based Management Advisory Panel (AP) and adopted a comment and policy development process. Members of the AP serve as the South Atlantic Council's habitat contacts and professionals in the field and have guided the South Atlantic Council's development of the following Policy Statements:

- [EFH Policy Statement on South Atlantic Climate Variability and Fisheries \(December 2016\)](#)
- [EFH Policy Statement on South Atlantic Food Webs and Connectivity \(December 2016\)](#)
- [Protection and Restoration of EFH from Marine Aquaculture \(June 2014\)](#)
- [Protection and Enhancement of Marine Submerged Aquatic Vegetation \(June 2014\)](#)
- [Protection and Restoration of EFH from Beach Dredging and Filling, Beach Re-nourishment and Large Scale Coastal Engineering \(March 2015\)](#)
- [Protection and Restoration of EFH from Energy Exploration, Development, Transportation and Hydropower Re-Licensing \(December 2015\)](#)
- [Protection and Restoration of EFH from Alterations to Riverine, Estuarine and Nearshore Flows \(June 2014\)](#)
- [Policies for the Protection of South Atlantic Marine & Estuarine Ecosystems from Non-Native and Invasive Species \(June 2014\)](#)
- [Policy Considerations for Development of Artificial Reefs in the South Atlantic Region and Protection of Essential Fish Habitat \(September 2017\)](#)

II. Habitat Conservation and Fishery Ecosystem Plans

The South Atlantic Council, views habitat conservation as the foundation in the move to Ecosystem Based Fishery Management (EBFM) in the region. The South Atlantic Council has been proactive in advancing habitat conservation through extensive gear restrictions in all South Atlantic Council FMPs and by directly managing habitat and fisheries affecting those habitats through two FMPs, the [FMP for Coral, Coral Reefs and Live/Hard Bottom Habitat of the South Atlantic Region](#) (Coral FMP) and the [FMP for the Sargassum Fishery of the South Atlantic Region](#). The FMP for the Dolphin and Wahoo Fishery in the Atlantic represents a proactive FMP which established fishery measures and identified EFH in advance of overfishing or habitat impacts from the fisheries.

Building on the long-term conservation approach, the South Atlantic Council facilitated the evolution of the Habitat Plan into the first FEP to provide a clear description and understanding of the fundamental physical, biological, and human/institutional context of ecosystems within which fisheries are managed and identify information needed and how that information should be used in the context of FMPs. Developing a South Atlantic FEP required a greater

understanding of the South Atlantic ecosystem, including both the complex relationships among humans, marine life, the environment and essential fish habitat and a more comprehensive understanding of the biological, social, and economic impacts of management necessary to initiate the transition from single species management to EBFM in the region. To support the move towards EBFM, the South Atlantic Council adopted broad goals: (1) maintaining or improving ecosystem structure and function; (2) maintaining or improving economic, (3) social, and cultural benefits from resources; and (4) maintaining or improving biological, economic, and cultural diversity.

III. Ecosystem Approach to Conservation and Management of Deep-water Ecosystems

Through [Comprehensive Ecosystem-Based Amendment 1](#), [Comprehensive Ecosystem-Based Amendment 2](#), and [Coral Amendment 8](#), the South Atlantic Council established and expanded deep-water coral HAPCs (CHAPCs) and co-designated them as EFH-HAPCs to protect the largest continuous distribution (>23,000 square miles) of pristine deep-water coral ecosystems in the world from fishing and non-fishing activities.

IV. FEP II Development

The South Atlantic Council developed FEP II in cooperation with NMFS, as a mechanism to incorporate ecosystem principles, goals, and policies into the fishery management process, including consideration of potential indirect effects of fisheries on food web linkages when developing harvest strategies and management plans. South Atlantic Council policies developed through the process support data collection, model and supporting tool development, and implementation of FEP II. FEP II and the FEP II Implementation Plan provide a system to incorporate of ecosystem considerations into the management process.

FEP II was developed employing writing and review teams established from the South Atlantic Council's Habitat Protection and Ecosystem Based Management AP, and experts from state, federal, NGOs, academia and other regional organizations and associations. Unlike the original Plan, FEP II is a living continually developing online information system presenting core sections and sections with links to documents or other online systems with detailed updated information on species, habitat, fisheries and research. A core part of the FEP II development process involved engaging the South Atlantic Council's Habitat Protection and Ecosystem Based Management AP and regional experts in developing new sections and ecosystem-specific policy statements to address South Atlantic food webs and connectivity and South Atlantic climate variability and fisheries. In addition, standing essential fish habitat policy statements were updated and a new artificial reef habitat policy statement was approved. In combination, these statements advance habitat conservation and the move to EBFM in the region. They also serve as the basis for further policy development, consideration in habitat and fish stock assessments and future management of fisheries and habitat. They also support a more comprehensive view of conservation and management in the South Atlantic and identify long-term information needs, available models, tools, and capabilities that will advance EBFM in the region.

FEP II Dashboard (In transition to new Habitat and Ecosystem Page)

The FEP II Dashboard and associated online tools provided a clear description of the fundamental physical, biological, human, and institutional context of South Atlantic ecosystems within which fisheries are managed. The Council's new website (under development) will include a new Habitat and Ecosystem page where the FEP II Dashboard layout shown below will be refined and integrated.

- Introduction
- South Atlantic Ecosystem
- South Atlantic Habitats
- Managed Species
- Social and Economic
- Essential Fish Habitat
- SAFMC Managed Areas
- Research & Monitoring
- SAFMC Tools

V. NOAA EBFM Activities Supporting FEP II

a. NOAA EBFM Policy and Road Map

To support the move to EBFM, NMFS developed an agency-wide EBFM Policy and Road Map (available through Ecosystem page (under revision) of the FEP II Dashboard that outlines a set of principles to guide actions and decisions over the long-term to: implement ecosystem-level planning; advance our understanding of ecosystem processes; prioritize vulnerabilities and risks of ecosystems and their components; explore and address trade-offs within an ecosystem; incorporate ecosystem considerations into management advice; and maintain resilient ecosystems.

b. FEP II Implementation Plan Structure and Framework

The Implementation Plan is structured to translate approved policy statements of the South Atlantic Council into actionable items. The plan encompasses chapters beginning with an introduction to the policy statement, a link to the complete policy statement, and a table which translates policies and policy components into potential action items. The actions within the plan are recommendations for activities that could support the South Atlantic Council's FEP II policies and objectives.

c. FEP II Two Year Roadmap

The FEP II Two Year Roadmap draws from the Implementation Plan and presents three to five priority actions for each of the nine approved policy statements of the South Atlantic Council which would be initiated or completed over the next two years (2019-2020). The Roadmap provides "Potential Partners" and other potential regional collaborators, a focused list of priority actions they could cooperate with the South Atlantic Council on to advance policies supporting the move to EBFM in the South Atlantic region.

d. *Monitoring/Revisions to FEP II Implementation Plan*

FEP II and this supporting Implementation Plan are considered active and living documents. The Implementation Plan will be reviewed and updated periodically. During their spring meeting in 2021 and every three years following, the Habitat Protection and Ecosystem Based Management AP will engage regional experts as needed, to determine whether additional actions addressing council policies should be added to the implementation plan. The South Atlantic Council’s Habitat Protection and Ecosystem Based Management Committee will review, revise and refine those recommendations for South Atlantic Council consideration and approval for inclusion into the implementation plan.

VI. Regional Habitat and Ecosystem Partners

The South Atlantic Council, with the Habitat Protection and Ecosystem Based Management AP as the foundation, collaborates with regional partners to create a comprehensive habitat and ecosystem network in the region to enhance habitat conservation and EBFM.

Detailed information and links to partners are highlighted online:

https://ocean.floridamarine.org/safmc_dashboard/partners.html.

VII. Regional Ecosystem Modeling in the South Atlantic

a. *South Atlantic Ecopath with Ecosim Model*

The South Atlantic Council worked cooperatively with the University of British Columbia and the Sea Around Us project to develop a straw-man and preliminary food web models (Ecopath with Ecosim) to characterize the ecological relationships of South Atlantic species, including those managed by the South Atlantic Council. This effort helped the South Atlantic Council and cooperators identify available information and data gaps while providing insight into ecosystem function. More importantly, the model development process provided a vehicle to identify research necessary to better define populations, fisheries, and their interrelationships. While individual efforts were underway in the South Atlantic, only with significant investment of resources through other programs was a comprehensive regional model further developed.

The current South Atlantic EwE model provides a more complete view of the system and supports potential future evaluations that may be possible with the model. With the model complete and tuned to the available data it can be used to address broad strategic issues and explore “what if” scenarios that could then be used to address tactical decision-making questions such as provide ecosystem context for single species management, address species assemblage questions, and address spatial questions using Ecospace.

A modeling team comprised of FWRI staff, South Atlantic Council staff and other technical experts as needed, will coordinate with members of the original Ecosystem Modeling Workgroup to maintain and further refine the South Atlantic Model.

The Council convened a working group to provide guidance on application of the Ecopath with Ecosim model framework to investigate potential impacts of increased red snapper recruitment on other species in the snapper grouper complex broader South Atlantic Ecosystem. The Working group met in August 2021 to review the model and provide guidance on further development and in September 2021 to review findings and prepare a report for SSC consideration. Results were presented to the SSC in October 2021.

VIII. Tools supporting Habitat Conservation and EBFM in the South Atlantic Region

The South Atlantic Council developed a Habitat Conservation and Ecosystem Management Section which provided access to the FEP II Digital Dashboard and associated tools which is under development with the new website. Florida's FWRI maintains and distributes GIS data, imagery, and documents relevant to habitat conservation and ecosystem-based fishery management in their jurisdiction. Web Services and spatial representations of EFH and other habitat related layers are accessible through the Council's [SAFMC Atlas](#), a platform for searching and visualizing GIS data relevant to the Council's mission and download of GIS layers and information on regional partners is available through the [SAFMC Digital Dashboard](#). The online systems provide access to the following Services:

- i. [South Atlantic Fisheries Webservice](#): Provides access to species distribution and spatial presentation of regional fishery independent data from the Southeast Area Monitoring and Assessment Program (South Atlantic) SEAMAP-SA, the Marine Resources Monitoring, Assessment, and Prediction program (MARMAP), and NOAA Southeast Fishery-Independent Survey (SEFIS).
- ii. [South Atlantic EFH Webservice](#): Provides access to spatial representation of EFH and EFH-HAPCs for South Atlantic Council-managed species and Highly Migratory Species.
- iii. [South Atlantic Managed Areas Service](#): Provides access to spatial presentations of South Atlantic Council and other managed areas in the region.
- iv. [South Atlantic Artificial Reefs Web Application](#): Provides a regional view of artificial reefs locations, contents and imagery associated with programs in the southeastern U.S. overseen by individual states (Florida, Georgia, South Carolina, North Carolina).
- v. South Atlantic [ACCSP Web Map](#) and [Application](#): The web map displays Atlantic Coastal Cooperative Statistics Program (ACCSP) Statistical Areas representing catch and values of Council-managed species across time with the application displaying charts of landings and values for ACCSP Statistical Areas.

IX. Ecosystem-Based Action, Future Challenges and Needs

One of the greatest challenges to enhance habitat conservation and EBFM in the region is funding high priority research, including comprehensive benthic mapping and ecosystem model and management tool development. In addition, collecting detailed information on fishing fleet dynamics including defining fishing operation areas by species, species complex, and season, as well as catch relative to habitat is critical for assessment of fishery, community, and habitat impacts and for South Atlantic Council use in place-based management measures. Additional resources need to be dedicated to expanding regional coordination of modeling, mapping, characterization of species use of habitats, and full funding of regional fishery independent surveys (e.g., MARMAP, SEAMAP, and SEFIS) which are linking directly to addressing high priority management needs. The FEP II Implementation Plan includes Appendix A to highlight research and data needs excerpted from the [SEAMAP 5 Year Plan](#) because they represent short and long-term research and data needs that support EBFM and habitat conservation in the South Atlantic Region.

Development of ecosystem information systems to support South Atlantic Council management should build on existing tools (e.g., Regional Habitat and Ecosystem GIS and Arc Services) and provide resources to regional cooperating partners for expansion to address long-term South

Atlantic Council needs. NOAA should support and build on the regional coordination efforts of the South Atlantic Council as it transitions to a broader management approach. Resources need to be provided to collect information necessary to update information supporting FEP II, which support refinement of EFH designations and spatial representations and future EBFM actions. These are the highest priority needs to support habitat conservation and EBFM, the completion of mapping of near-shore, mid-shelf, shelf edge, and deep-water habitats in the South Atlantic region and refinement in the characterization of species use of habitats

Appendix E. Alternatives Considered but Eliminated

Appendix F. Data Analysis

Red Snapper Closure Prediction Analysis

Regulatory Amendment 35 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 35) is considering reducing both the commercial and recreational red snapper annual catch limits (ACL). An analysis was needed to determine the impact of the reduction of the total and sector ACLs. The first step is predicting future landings for both the commercial and recreational sectors.

Commercial Sector

The commercial ACL is 124,815 pounds whole weight (lbs ww)¹³, and the commercial season begins on the second Monday in July each year. The commercial ACL is monitored during the season and the sector is closed when the ACL is reached or projected to be reached. Since 2017, the commercial sector has had various open fishing periods each year (Table F-1). From 2017 through 2021, except for 2018, the red snapper commercial sector was open for about two months (Table F-1). The commercial season was reopened during late 2018 and 2021 because the ACL was not met when the season was first open. Therefore, predicted landings came from determining the catch rate per day for each month when the commercial sector was open from 2017 through 2021. Data before 2017 was not used because the South Atlantic red snapper fishery was closed in 2015 and 2016 due to estimated high mortality of discarded red snapper. Also, landings before 2015 were not used because it was assumed the recent landings (2017 to 2021) would better reflect future landings more than older landings (before 2015). Figure F-1 displays the catch rate per day for each year from the recent time periods when the commercial sector was open (2017 through 2021), and also the average catch rate for each month when data was available.

¹³Based on the current sector allocation ratio developed by the Council for red snapper of 28.07 percent commercial and 71.93 percent recreational, the total ACL is separated into a commercial ACL of 124,815 lbs ww, and a recreational ACL of 29,656 fish. The commercial sector's ACL is set in pounds of fish because the commercial sector reports landings in weight. Therefore, weight is a more accurate representation of commercial landings. In Regulatory Amendment 35, for the commercial sector, one red snapper is equivalent to 8.67 lbs ww. ACLs for the recreational sector are specified in numbers of fish because the Council determined that numbers of fish are a more reliable estimate for that sector than specifying the ACL in weight of fish. Because surveys that estimate recreational landings collect information on numbers of fish and convert those numbers to weights using biological samples that are sometimes limited, the Council believes that there can be uncertainty in estimates of recreational landings by weight.

Table F-1. Dates when the South Atlantic red snapper commercial sector was open in the years of 2017 through 2021.

Year	Days Open During Season	Number of Open Days
2017	November 2, 2017 to December 31, 2017	60
2018	July 26, 2018 to November 7, 2018, reopened December 5, 2018 to December 15, 2018	114
2019	July 8, 2019 to August 30, 2019	53
2020	July 13, 2020 to September 5, 2020	54
2021	July 12, 2021, to September 14, 2021, reopened November 2, 2021, to November 6, 2021	68

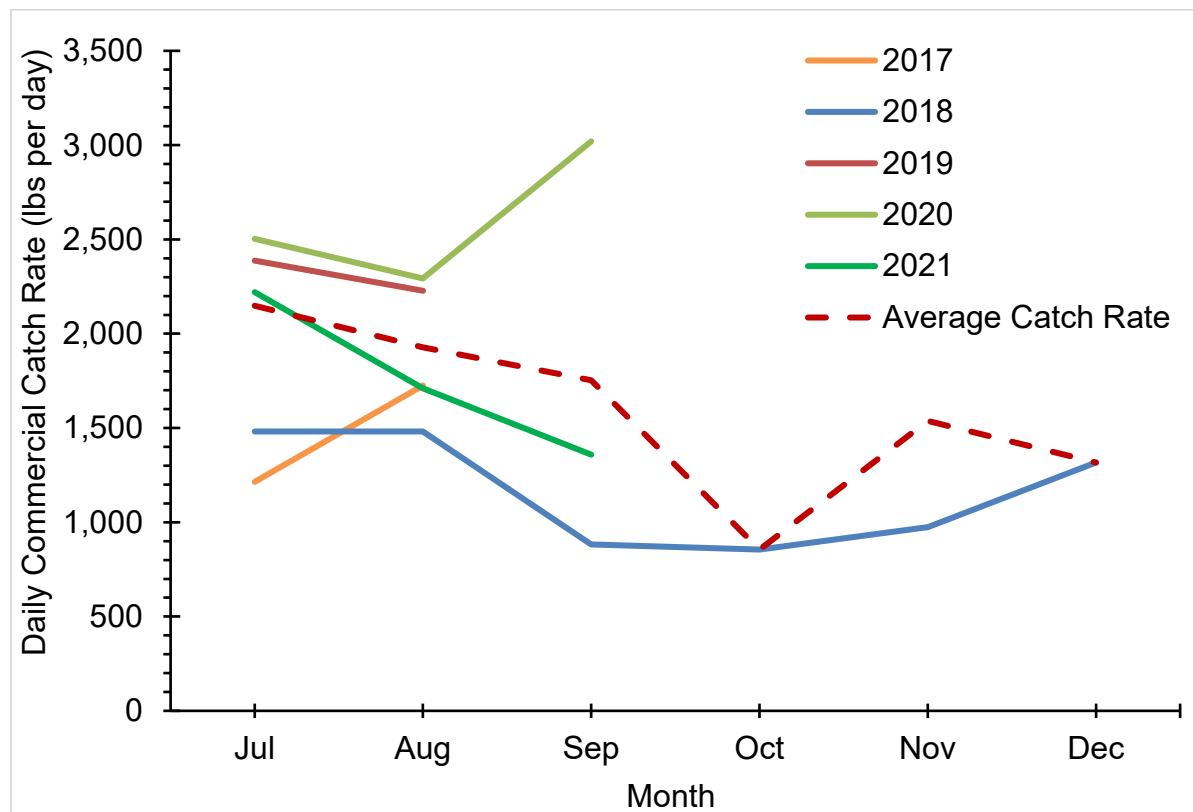


Figure F-1. South Atlantic red snapper commercial catch per day for months when the commercial sector was open in the years of 2017 through 2021. Also, an average catch rate for each month when the commercial sector was open is shown with the red dashed line. The catch rate is in pounds whole weight (lbs ww).

Predicted landings for the various commercial ACLs in Action 1 of Regulatory Amendment 35 were analyzed by using the average catch rates by month. As stated earlier, Amendment 28 to the Snapper Grouper FMP (SAFMC 2013) set the start of the commercial sector to be the second

Monday in July. The second Monday in July could occur on the range of dates from as early as July 8 to as late as July 12. Since the start date could change from year to year a start date of July 10 was chosen since it falls in the middle of July 8 through 12. Alternatives 2, 3, and 4 of Action 1 have five different ACLs from 2023 through 2027 until modified. The analysis was simplified by only using the high and low ACL of Alternatives 2, 3, and 4. Alternative 5 of Action 1 sets the ACL at zero beginning in 2023 through 2027 until modified, and Alternative 5 was not analyzed because the fishery would be closed under the ACL of zero. The estimated closure dates for the various commercial ACLs are shown in Table F-2. The commercial ACLs are in pounds whole weight.

Table F-2. Estimated closure dates for the various commercial ACLs being considered in Action 1 in Regulatory Amendment 35. The closure dates were determined from assuming the commercial sector opens on July 10.

Alternative	Fishing year	Commercial ACL (lbs ww)	Closure Date	Total number of open days
Alternative 1	-	124,815	11-Sep	63
Alternative 2 Low	2023	77,016	16-Aug	37
Alternative 2 High	2027+	99,021	27-Aug	48
Alternative 3 Low	2023	73,166	14-Aug	35
Alternative 3 High	2027+	94,070	25-Aug	46
Alternative 4 Low	2023	69,315	12-Aug	33
Alternative 4 High	2027+	89,119	22-Aug	43

Recreational Sector

The first step in analyzing the impact from the various ACLs in Regulatory Amendment 35 is an analysis of past landings. The red snapper recreational sector was open for six days in November and three days in December during 2017, and for six days during August in 2018. In 2019, 2020, and 2021, the recreational season was open in July for five days, four days, and three days, respectively. Due to potential changes to stock size over time and the limited historical data from July, this analysis only uses July 2019, 2020, and 2021 data as a proxy to predict future landings and the recreational season.

Table F-3. Dates when the South Atlantic red snapper recreational sector was open in the years of 2017 through 2021.

Year	Days Open During Season	Number of Open Days
2017	November 3, 4, 5, 10, 11, and 12, 2017; reopened December 8, 9, 10, 2017.	9
2018	August 10, 11, 12, 17, 18, and 19, 2018	6
2019	July 12, 13, 14, 19 and 20, 2019	5
2020	July 10, 11, 12, and 17, 2020	4
2021	July 9, 10, and 11, 2021	3

Application of data obtained from the Marine Recreational Information Program (MRIP) for analysis is limited because the MRIP survey provides two-month (rather than daily or monthly) estimates of recreational landings, and is therefore not set up to generate landings estimates for such short red snapper recreational fishing seasons. To overcome this MRIP survey limitation, the South Atlantic states (North Carolina, South Carolina, Georgia, and Florida) conducted their own state specific red snapper surveys during the South Atlantic red snapper recreational season in 2019, 2020, and 2021. A red snapper mini-season ad-hoc group consisting of NMFS and state employees who were involved with the MRIP and individual state red snapper surveys was formed. The group met in 2020 to review the 2019 MRIP and state survey red snapper data (SEDAR 73-WP10) to determine the best estimates to use to characterize the South Atlantic red snapper recreational landings for the stock assessment. The data sources (MRIP and state surveys) for the 2019 data used in this analysis were chosen following the ad-hoc group’s guidance and recommendations used in the stock assessment. The Southeast Region Headboat Survey (SRHS) is the only survey that collects recreational landings from headboats, and the SRHS red snapper landings were also included for this analysis.

At the present time (October 2022), complete and final MRIP and SRHS landings are available for 2021. All of the individual state specific red snapper surveys of 2021 are also available at this time. The red snapper mini-season ad-hoc group did not meet to discuss the 2020 and 2021 red snapper recreational landings, because the group only met to review the red snapper landings that were needed for the latest stock assessment and the last year of data used for SEDAR 73 was 2019. However, this analysis applies the ad-hoc group’s recommendations to the review of the 2020 and 2021 recreational landings data.

The red snapper mini-season ad-hoc group method of choosing the recreational landings data by each state and mode is defined below. This method was followed to determine the best scientific information available to be used to determine the 2020 and 2021 recreational landings.

Method 1: Use state survey numbers if no MRIP numbers are available

Method 2: Use MRIP numbers if no state survey numbers are available

Method 3: Use the estimate/number (MRIP or state survey) that is more reliable (taking into account sample sizes, variability, and/or biases associated with the survey) when both MRIP and state survey numbers were available.

The method defined above was used to determine the 2019, 2020, and 2021 landings by state and mode. The landings and the catch rate (fish per day) are shown in Table F-4.

Table F-4. Summary of the 2019, 2020, 2021, and average of 2019 through 2021 South Atlantic red snapper recreational landings. The landings are in numbers of fish. The catch rate was determined by dividing the July harvest by the number of days the season was open in July. In 2019 the recreational season was 5 days, the 2020 recreational season was 4 days, and the 2021 recreational season was 3 days.

State	2019 Landings	2020 Landings	2021 Landings	Average 2019, 2020, and 2021 Landings
Landings (Numbers of Fish)				
NC	150	678	1,877	902
SC	3,168	3,840	332	2,447
GA	2,243	1,891	807	1,647
East FL	44,113	36,363	36,053	38,843
Total	49,674	42,772	39,069	43,838
Catch Rates (Fish per Day)				
NC	30	170	626	275
SC	634	960	111	568
GA	449	473	269	397
East FL	8,823	9,091	12,018	9,977
Total	9,936	10,693	13,023	11,217

During the closed recreational red snapper season (January through June, August through December) in 2019, 2020, and 2021, there was an average total harvest of 600 red snapper. This analysis assumed there would be 600 red snapper harvested in the recreational sector during the closed recreational red snapper season. Therefore, the analysis assumes 600 red snapper harvested in the recreational sector from January through June, and from August through December.

Because the red snapper recreational fishing season opens in July and NMFS projects the length of the recreational fishing season, future landings were only predicted for July. Future July recreational landings were estimated by calculating the red snapper recreational daily catch rate from the average of 2019 through 2021 (Table F-4), and then applying the catch rate to the number of weekend days (Friday, Saturday, and Sunday) for July. Predicted landings assumed a uniform distribution of landings for each day in July. Based on the information and analyses described above, the recreational red snapper sector is predicted to meet the various ACLs presented in Regulatory Amendment 35 in one to three days (Table F-5).

Table F-5. Estimated number of days the recreational season would be open for the various recreational ACLs being considered in Action 1 in Regulatory Amendment 35. The number of days was generated by dividing the recreational ACL by the average catch rate (11,217 fish per day).

Alternative	Fishing Year	Recreational ACL (Numbers of Fish)	Estimated Number of Open Days
Alternative 1		29,656	3
Alternative 2 Low	2023	19,119	2
Alternative 2 High	2027+	27,119	2
Alternative 3 Low	2023	17,719	2
Alternative 3 High	2027+	25,319	2
Alternative 4 Low	2023	16,319	1
Alternative 4 High	2027+	23,519	2

Appendix G. Bycatch Practicability Analysis (BPA)

Background

National Standard 9 of the Magnuson-Stevens Act states that “Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.” The Magnuson-Stevens Act defines “bycatch”, in part, as fish which are harvested in a fishery, but which are not sold or kept for personal use, and includes economic discards and regulatory discards. The National Marine Fisheries Service (NMFS) outlines, at 50 C.F.R. §600.350(d) (3) (i), ten factors that should be considered in determining whether a management measure minimizes bycatch or bycatch mortality to the extent practicable.

1. Population effects for the bycatch species.
2. Ecological effects due to changes in the bycatch of that species (effects on other species in the ecosystem).
3. Changes in the bycatch of other species of fish and the resulting population and ecosystem effects.
4. Effects on marine mammals and birds.
5. Changes in fishing, processing, disposal, and marketing costs.
6. Changes in fishing practices and behavior of fishermen.
7. Changes in research, administration, and enforcement costs and management effectiveness.
8. Changes in the economic, social, or cultural value of fishing activities and non-consumptive uses of fishery resources.
9. Changes in the distribution of benefits and costs.
10. Social effects.

The Fishery Management Councils are encouraged to adhere to the precautionary approach outlined in Article 6.5 of the Food and Agriculture Organization of the United Nations Code of Conduct for Responsible Fisheries when uncertain about these factors.

Bycatch Reporting Requirements and Methodology

For the commercial sector, the vessel reporting requirement is achieved through logbooks. Fishermen with Commercial South Atlantic Unlimited Snapper Grouper or 225-lb Trip Limit Snapper Grouper Permits, who are selected by the Science and Research Director, are required to maintain and submit fishing records through the NMFS Southeast Fisheries Science Center (SEFSC) Commercial Logbook. Discard data are collected using the Supplemental Discard Logbook that is sent to a 20% stratified random sample of the active commercial permit holders in the fishery. In addition to the number of self-reported discards per trip and gear, the SEFSC Supplemental Discard Logbook attempts to quantify the reason why discarding occurs using four

codes.¹⁴ Fishermen can specify multiple reasons for a species discarded on the same trip and gear.

- 1) Regulation – Not legal size: Animals that would have been sold, however local or federal size limits forbid it.
- 2) Regulation – Out of season: Animals that would have been sold, however the local or federal fishing season is closed.
- 3) Regulation – Other: Animals that would have been sold, however a local or federal regulation other than size or season, forbids it (Other than size or season; i.e., protected species, not properly permitted).
- 4) Market conditions: Animals that have no market value (rotten, damaged).

For the recreational sector, estimates of discards from private recreational and charter fishermen are collected through the Marine Recreational Information Program (MRIP)/Fishing Effort Survey (FES). The Southeast Region Headboat Survey, which includes limited headboat observer sampling, collects discard information from headboat vessels. Red snapper discards are also collected from a red snapper specific survey run by the Florida Fish and Wildlife Conservation Commission (FWC). The FWC only operates their red snapper specific survey when the red snapper recreational season is open. Therefore, if there is only a three-day recreational season for red snapper then the FWC survey will only collect discards during those three days. In addition, in January 2021, NMFS implemented the Southeast For-Hire Electronic Reporting Program, which implemented mandatory electronic reporting of for-hire vessel catch data for over 3,000 vessels in the Gulf of Mexico and South Atlantic. The purpose of this program is to provide more accurate and reliable fisheries information about for-hire catch, effort, and discards.

Population Effects for the Bycatch Species

The South Atlantic Fishery Management Council (Council) manages snapper grouper stocks in federal waters from the Florida Keys to the Virginia/North Carolina border. Regulatory Amendment 35 to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) (Regulatory Amendment 35) would modify management of South Atlantic red snapper. Actions include revising annual catch limits (ACL), and gear modifications for the recreational sector. Development of Regulatory Amendment 35 is a response to the most recent stock assessment for South Atlantic red snapper (SEDAR 73 2021).

Commercial Sector

Commercial discards in the South Atlantic snapper grouper fishery are shown in Table G-1 and Figure G-1, including red snapper, vermilion snapper, black sea bass, and red porgy. Most discards originate from handline/electric rig and trap gear, with some discards from trolling gear and relatively low discards from longline and diving gear. Trap/pot gear show high levels of discarded black sea bass, which is the targeted species of this gear type, but low levels of bycatch for other species. It is possible that trip-level reporting leads to the relatively high discard

¹⁴ More information on the discard logbook is available here <https://www.fisheries.noaa.gov/about/southeast-fisheries-science-center>.

estimates from trolling gear; these may be sets using another gear type (i.e., handline/electric rig) on a trip declared as a trolling gear trip. The ratio of commercial landings to commercial discards is not compared because commercial landings are reported in lbs and discards are reported in numbers of fish.

Table G-1. Top ten species with mean estimated South Atlantic commercial discards (number of fish) during snapper grouper trips (defined as trips with >50% of landings from snapper grouper stocks), sorted from largest to smallest, by gear, for the 2015-2019 period.

Stock	Diver	Stock	Handline / Electric	Stock	Longline	Stock	Trap / Pot	Stock	Troll
Gray Snapper	133	Vermilion Snapper	23,324	Red Grouper	176	Black Sea Bass	25,581	Black Sea Bass	1,114
Hogfish	57	Red Porgy	20,337	Snowy Grouper	157	Trigger-fishes	1,507	Grunts	66
Black Grouper	28	Red Snapper	16,805	Blueline Tilefish	32	Vermilion Snapper	662	King Mackerel	34
Ocean Triggerfish	10	Black Sea Bass	7,797	Greater Amberjack	26	Gray Triggerfish	407	White Grunt	24
Mutton Snapper	8	Yellowtail Snapper	7,278	Red Snapper	20	White Grunt	207	Gag	19
Red Grouper	5	Gray Triggerfish	3,966	Red Porgy	18	Grunts	161	Dolphin	16
Yellow Jack	2	Trigger-fishes	2,652	Trigger-fishes	5	Red Porgy	94	Black Grouper	13
Yellowtail Snapper	2	Almaco Jack	2,004	Golden Tilefish	2	Red Snapper	65	Rock Sea Bass	6
Groupers	1	Blue Runner	1,956	Amberjacks	1	Gag	23	Trigger-fishes	5
King Mackerel	1	Greater Amberjack	1,510	Blackfin Snapper	1	Red Grouper	6	Greater Amberjack	3

Source: SEFSC Coastal Logbook (accessed May 2020) and Discard Logbook (accessed May 2020). Note: Commercial gray triggerfish includes the "triggerfishes, unclassified" category.

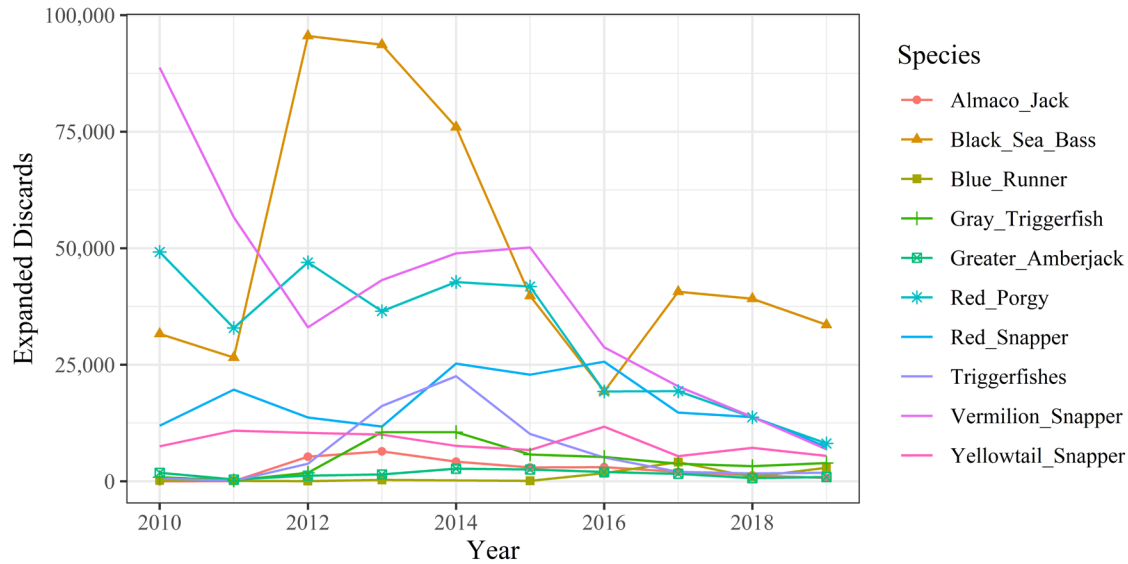


Figure G-1. Expanded self-reported commercial discards (numbers of fish) for the top ten species discarded during snapper grouper trips (defined as trips with >50% of landings from snapper grouper stocks) from 2010-2019 for all gear types.

Source: SEFSC Coastal Logbook (accessed May 2020) and Discard Logbook (accessed May 2020).

Table G-2 lists the top ten species harvested on the same trips that harvested South Atlantic red snapper. The data for Table G-2 was generated from SEFSC commercial logbook data. The analysis was done by isolating all commercial logbook trips that reported any harvest of red snapper using data from 2019 through 2021 in the South Atlantic, and then summarizing the other species caught on these same trips. The most common species being landed with red snapper in the South Atlantic were vermilion snapper and gray triggerfish. These analyses are limited to co-occurrence of landings and do not contain any information on species that were discarded at-sea. Other studies have incorporated data from the Reef Fish Observer Program in the Gulf of Mexico and an independent sampling program that may provide more comprehensive analyses, but these are focused on the Gulf of Mexico and not the South Atlantic (Pulver et al. 2016).

Table G-2. The top ten species harvested on a commercial trip that harvested South Atlantic red snapper from 2019 through 2021.

Species Landed	Percent of Trips
Vermilion Snapper	20.2
Gray Triggerfish	18.6
Red Porgy	13.4
King Mackerel	12.2
Black Sea Bass	11.7
Greater Amberjack	11.3
Gag Grouper	10.3
Scamp	10.1
Mangrove Snapper	8.2
Almaco Jack	7.7

Source: Southeast Fisheries Science Center Commercial Logbook (September 2022).

Of the four discard codes, regulations (i.e., not legal size and out of season) was the most common reason selected for discarded red snapper based on self-reported discards (Table G-2). Out of season was also the primary driver of discards for almaco jack, red porgy, red snapper, and vermilion snapper. The minimum size limit was the primary driver of commercial discards for black sea bass, gag, gray snapper, gray triggerfish, greater amberjack, and yellowtail snapper.

Table G-3. The percentage of unexpanded discards for each discard reason out of the total number of self-reported discards reported to the Supplemental Commercial Discard Logbook for the top ten snapper grouper species discarded in the South Atlantic from 2015 through 2019. Some percentages may not sum to 100% due to rounding.

Species	Not Legal Size	Out of Season	Other Regulations	Market Conditions
Almaco Jack	4%	72%	7%	17%
Black Sea Bass	99%	0%	0%	0%
Gag	78%	20%	0%	2%
Gray Snapper	91%	0%	0%	8%
Gray Triggerfish	59%	39%	1%	0%
Greater Amberjack	77%	20%	3%	1%
Red Porgy	19%	78%	2%	0%
Red Snapper	2%	78%	20%	0%
Vermilion Snapper	43%	50%	7%	0%
Yellowtail Snapper	92%	6%	2%	0%

Sources: SEFSC Supplemental Commercial Discard Logbook (May 2020).

Recreational Sector

From 2019 through 2021, the most discarded species on trips capturing a snapper grouper species was black sea bass for two of the three modes (Table G-4). Gray snapper had greatest amount of discards for the private mode as other snapper grouper species. Red snapper, vermilion snapper, and grunt species were in the top ten for all modes.

Table G-4. Top ten species with discards reported on trips capturing a snapper grouper species in the South Atlantic by recreational mode from 2019 through 2021. Species are sorted by number of total discards for each mode from 2019-2021.

Rank	HEADBOAT		CHARTER		PRIVATE	
	Species	Discards (N)	Species	Discards (N)	Species	Discards (N)
1	Black Sea Bass	1,031,872	Black Sea Bass	674,459	Gray Snapper	32,774,950
2	Red Snapper	516,330	Red Snapper	364,669	Black Sea Bass	19,107,665
3	Vermilion Snapper	347,736	Gray Snapper	288,851	Blue Runner	11,887,718
4	Gray Triggerfish	336,539	Tomtate	225,833	Red Snapper	7,203,918
5	White Grunt	331,753	Vermilion Snapper	185,268	Grunt family	5,655,851
6	Tomtate	246,859	Grunt Family	176,259	Tomtate	3,798,129
7	Yellowtail Snapper	158,153	Mutton Snapper	67,736	Atlantic Spadefish	3,373,111
8	Red Grouper	139,832	Blue Runner	60,844	Vermilion Snapper	2,377,021
9	Lane Snapper	69,361	Greater Amberjack	57,094	Yellowtail Snapper	2,025,943
10	Blue Runner	56,688	Gray Triggerfish	44,429	Mutton Snapper	1,992,303

Sources: MRIP FES data from SEFSC Recreational ACL Dataset (September 2021); Headboat data from SEFSC Headboat Logbook files (October 2020).

Recreational discards of several snapper grouper species are higher than the landings for certain modes of fishing (Table G-5). Black sea bass, gag, red snapper, red grouper, and tomtate discards are much higher than their landings across all modes. Across most of the snapper grouper species, the magnitude of private mode discards is much higher compared to the headboat or charter modes. Red snapper recreational discards to landings ratios are 5,270% in the headboat component, 1,177% in the charter component, and 859% in the private recreational component (Table G-5).

Table G-5. South Atlantic snapper grouper headboat, charter, and private mean annual estimates of landings and discards (2019-2021). Headboat and MRIP (charter and private) landings and discards are in numbers of fish.

Species	HEADBOAT			CHARTER			PRIVATE		
	Landings (N)	Discards (N)	Ratio (D:L)	Landings (N)	Discards (N)	Ratio (D:L)	Landings (N)	Discards (N)	Ratio (D:L)
Almaco Jack	37,387	7,980	21%	59,999	10,802	18%	255,107	755,521	296%
Black Sea Bass	92,199	1,031,872	1,119%	87,046	674,459	775%	795,935	19,107,665	2,401%
Gag	1,525	47,442	3,111%	4,867	7,333	151%	45,778	201,114	439%
Gray Triggerfish	90,099	331,753	368%	187,049	44,429	24%	906,238	1,198,325	132%
Greater Amberjack	7,635	15,000	196%	56,509	57,094	101%	104,767	224,289	214%
Mutton Snapper	31,135	36,512	117%	14,280	67,736	474%	348,690	1,992,303	571%
Red Grouper	7,580	139,832	1845%	1,201	1,877	156%	48,821	160,300	328%
Red Porgy	19,978	17,002	85%	17,134	5,169	30%	141,612	131,775	93%
Red Snapper	9,798	516,330	5,270%	30,972	364,669	1,177%	839,033	7,203,918	859%
Scamp	2,519	8,057	320%	3,991	970	24%	6,484	7,681	118%
Snowy Grouper	588	4	1%	2,471	210	8%	0	474	0
Tomtate	111,173	246,859	222%	57,409	225,833	393%	966,711	3,798,021	393%
Vermilion Snapper	388,429	347,736	90%	330,554	185,268	56%	1,577,348	2,377,021	151%
White Grunt	380,602	331,753	87%	67,536	14,536	22%	863,855	1,756,613	203%
Whitebone Porgy	13,801	1,170	8%	5,060	195	4%	94,895	11,412	12%
Yellowtail Snapper	283,872	158,153	56%	47,380	24,168	51%	1,436,119	2,025,943	141%

Sources: MRIP FES data from SEFSC Recreational ACL Dataset (September 2022); Headboat data from SEFSC Headboat Logbook files (October 2022)

Current Discards

Currently, commercial discard data are collected using a supplemental form that is sent to a 20% stratified random sample of the active permit holders in the snapper grouper fishery. However, in the absence of any observer data, there are concerns about the accuracy of logbook data in collecting bycatch information. Biases associated with logbooks primarily result from inaccuracy in reporting of species that are caught in large numbers or are of little economic interest (particularly of bycatch species), and from low compliance rates. Commercial discards were estimated by month using the SEFSC Commercial Logbook and Supplemental Discard Logbook (accessed May 2021) to develop a discard rate in numbers of fish per unit of effort, by species, gear, and region, and expand that rate to the total effort in the fishery by gear and region. Note that a randomly selected comprehensive observer program is not available in the South Atlantic, thus estimation of commercial discards is reliant upon self-reported data.

Red snapper contributed to a significant number of discards in the South Atlantic region. From 2019 through 2021, the commercial sector of the South Atlantic snapper grouper fishery had red snapper listed as the second most commonly discarded species (Table G-6). An examination of the recreational sector provided the South Atlantic red snapper discards by state with most of the red snapper discards occurring off Florida (Table G-7). An examination of the discards by wave has the July/August wave having the highest number of discards (Table G-8).

Table G-6. Mean annual South Atlantic commercial discards for top ten snapper grouper species from 2019 through 2021. Discards represent numbers of fish (n).

Species	Mean Discards (n)
Vermilion Snapper	23,408
Red Snapper	18,781
Gray Triggerfish	14,944
Yellowtail Snapper	11,089
Almaco Jack	7,899
Greater Amberjack	3,175
Gag	2,067
Gray Snapper	1,909
Scamp	1,243
Mutton Snapper	377

Sources: Discard estimates expanded from the SEFSC Supplemental Commercial Discard Logbook (May 2021). The discard logbook is not complete for 2021 at this time.

Table G-7. South Atlantic red snapper recreational discards by state from 2019 through 2021*.

State	Discards
North Carolina	46,687
South Carolina	322,196
Georgia	233,760
East Florida	6,965,944

*Data from recreational landings provided from the SEFSC in September 2022.

Table G-8. South Atlantic red snapper recreational discards by two-month wave from 2019 through 2021.

	Jan/Feb	Mar/Apr	May/June	Jul/Aug	Sep/Oct	Nov/Dec
Discards	983,577	810,041	1,905,451	2,492,263	634,934	742,321

*Data from recreational landings provided from the SEFSC on September 2022.

Practicability of Management Measures in Directed Fisheries Relative to their Impact on Bycatch and Bycatch Mortality

Expected Impacts on Bycatch for the Subject Amendment Actions

Action 1 would revise the acceptable biological catch (ABC), total ACL, and establish an annual optimum yield (OY) for red snapper. The regulation ‘out of season’ was the most common reason selected for commercial release of red snapper (Table G-3). **Alternatives 2 through 5** would allow for less fish to be harvested compared to **Alternative 1 (No Action)**, and increase the likelihood of in-season closures. Therefore, it is expected that there would be an increase in bycatch because more fish would need to be returned to the water rather than kept, which has indirect adverse effects to the red snapper stock. However, if there are less trips targeting red snapper during the closed seasons, then discards could decrease. Fishing effort or behavior is not expected to change for the overall snapper grouper fishery; thus, minimal to no changes in bycatch of co-occurring species are expected as a result of Action 1.

Action 2 would prohibit the use of electrically or hydraulically-powered reels to fish for snapper grouper species by the recreational sector. Prohibition of these types of reels is expected to reduce catch efficiency by slowing how quickly fish can be brought to the surface and onboard a vessel. Slowed catch rates would be expected to provide biological benefits by reducing overall catch of snapper grouper fishes, which would reduce harvest and release mortality. By reducing overall catch of snapper grouper species (including red snapper), this action will contribute to ending overfishing of red snapper by lowering the fishing mortality applied to the stock.

Action 3 would prohibit the use of more than one hook per line for the snapper grouper recreational sectors. Prohibition of more than one hook per line is expected to reduce catch efficiency by requiring more drops to catch a given number of fish. Slowed catch rates would be expected to provide biological benefits by reducing overall catch of snapper grouper fishes, which would reduce harvest and release mortality. By reducing overall catch of snapper grouper species (including red snapper) and discards, this action will contribute to ending overfishing of red snapper by lowering the fishing mortality applied to the stock.

Past, Current, and Future Actions to Prevent Bycatch and Improve Monitoring of Harvest, Discards, and Discard Mortality

Actions taken in the Snapper Grouper FMP related to management of red snapper, including actions that could reduce bycatch and bycatch mortality of red snapper and other snapper grouper species, are outlined in Section 1.7 of this regulatory amendment. Other past, current, and future actions that could prevent bycatch and/or improve monitoring of harvest, discards, and discard mortality are included below.

Amendment 16 to the Snapper Grouper FMP (SAFMC 2009) required the use of dehooking devices, which could help reduce bycatch mortality of snapper grouper species. Dehooking devices can allow fishermen to remove hooks with greater ease and more quickly without removing the fish from the water. If a fish does need to be removed from the water, de-hookers reduce handling time thus increasing survival (Cooke et al. 2001).

Amendment 17A to the Snapper Grouper FMP (SAFMC 2010) required circle hooks for snapper grouper species north of 28 degrees latitude, which has likely reduced bycatch mortality of some snapper grouper species.

The Comprehensive Ecosystem-Based Amendment 2 (CE-BA 2; SAFMC 2011a) included actions that modified management of special management zones (SMZ) off South Carolina; revised sea turtle release gear requirements for the snapper grouper fishery that were established in Amendment 15B to the Snapper Grouper FMP (SAFMC 2008); and designated new essential fish habitat (EFH) and EFH-Habitat Areas of Particular Concern in the South Atlantic. CE-BA 2 also included an action that limited harvest and possession of snapper grouper and coastal migratory pelagic (CMP) species to the bag limit in the special management zone (SMZ) off South Carolina. This action likely reduced bycatch around SMZs by restricting commercial harvest in the area, but has probably had limited effect on the magnitude of overall bycatch of snapper grouper species in the South Atlantic.

The Comprehensive ACL Amendment (SAFMC 2011b) implemented ACLs and AMs for species not undergoing overfishing in the FMPs for snapper grouper, dolphin and wahoo, golden crab, and *Sargassum*, in addition to other actions such as allocations and establishing annual catch targets for the recreational sector. ACLs and AMs have likely reduced bycatch of target species as well as incidentally caught species.

The Council's Headboat Electronic Reporting Amendment (SAFMC 2013) changed the reporting frequency by headboats from monthly to weekly, and required that reports be submitted electronically. The action is expected to provide more timely information on landings and discards. Improved information on landings would help ensure ACLs are not exceeded. Furthermore, more timely and accurate information would be expected to provide a better understanding of the composition and magnitude of catch and bycatch, enhance the quality of data provided for stock assessments, increase the quality of assessment output, and lead to better decisions regarding additional measures to reduce bycatch.

Amendment 36 to the Snapper Grouper FMP (SAFMC 2016) established spawning SMZs and is expected to reduce bycatch of many snapper grouper species, especially speckled hind and Warsaw grouper.

The Council developed a joint For-Hire Reporting Amendment (SAFMC 2017) with the Gulf of Mexico Fishery Management Council that requires all federally permitted charter vessels report landings information weekly to the SEFSC electronically. Additionally, the Councils have also begun development of a joint amendment to require that all federally permitted commercial fishing vessels in the southeast also report their logbook landings information electronically. These future actions will help to improve estimates on the composition and magnitude of catch and bycatch of species affected by this amendment, as well as all other federally managed species in the southeast region.

Amendment 42 to the Snapper Grouper FMP (SAFMC 2019c) modified sea turtle release gear regulations for the commercial snapper grouper fishery and modified the snapper grouper framework so the Council may more quickly modify sea turtle and other protected resources release gear and handling requirements in the future.

Regulatory Amendment 29 to the Snapper Grouper FMP (SAFMC 2020) required descending devices be on board all commercial, for-hire, and private recreational vessels while fishing for or possessing snapper grouper in order to reduce discard mortality of snapper grouper species; the use of non-offset, non-stainless steel circle hooks when fishing for snapper grouper species with hook-and-line gear and natural baits north of 28° N latitude; and all hooks be non-stainless steel when fishing for snapper grouper species with hook-and-line gear and natural baits throughout South Atlantic federal waters. The Council has also implemented an extensive outreach and public education program, which along with its citizen science initiative is promoting best fishing practices for all the species it manages.

Regulatory Amendment 31 to the Snapper Grouper FMP (included in the Comprehensive Recreational AMs Amendment) could include actions to revise recreational AMs to allow more flexibility in managing recreational fisheries. This amendment is currently on hold.

Amendment 46 to the Snapper Grouper FMP proposes actions to focus on private recreational permit and reporting.

These past, current, and potential future actions will help to improve estimates on the composition and magnitude of catch and bycatch of federally managed species in the southeast region and minimize discard mortality. Additional information on fishery related actions from the past, present, and future considerations can be found in Chapter 6 (Cumulative Effects) of the amendment.

Ecological Effects Due to Changes in Bycatch

Release mortality rates for the snapper grouper fishery are widely variable species to species and sector to sector, and are dependent on fishing mode (Table G-9). For instance, recreational

discards of red snapper in the South Atlantic are a main driver in the overfishing determination for the stock (SEDAR 41 2017 and SEDAR 73 2021). However, discard mortality estimates for snapper grouper species are variable and highly uncertain. Generally, release mortality is highly correlated with depth for snapper grouper species, with highest mortality among fish captured in deep water (Campbell et al. 2014; Pulver 2017; Rudershausen et al. 2014; Stephen and Harris 2010; Wilson and Burns 1996). Red snapper can be found in 33-623 feet of water. A range of release mortality rates were used in the latest assessment of South Atlantic red snapper. In SEDAR 73 (2021), the release mortalities varied by sector, gear, and time period. The release mortality rates ranged from 0.22 to 0.32 (Table G-9).

Table G-9. Release mortality rates of select recreationally and commercially important snapper-grouper species from recent stock assessments.

Species	Fishery	Release mortality	Data Source
Black Sea Bass	Recreational	13.7%	SEDAR 56 (2018)
Black Sea Bass	Commercial Trap/Pot (2007- present)	6.8%	SEDAR 56 (2018)
Black Sea Bass	Commercial Vertical Line	19%	SEDAR 56 (2018)
Gag	Recreational	25%	SEDAR 10 Update (2014)
Gag	Commercial	40%	SEDAR 10 Update (2014)
Gray Triggerfish	Recreational & Commercial	12.5%	SEDAR 41 (2016)
Greater Amberjack	Recreational & Commercial	20%	SEDAR 59 (2020)
Red Porgy	Recreational	41%	SEDAR 60 (2020)
Red Porgy	Commercial	53%	SEDAR 60 (2020)
Red Snapper	Recreational - Private	23%	SEDAR 73 (2021)
Red Snapper	Recreational - Charter & Headboat	22%	SEDAR 73 (2021)
Red Snapper	Commercial	32%	SEDAR 73 (2021)
Vermilion snapper	Recreational	38%	SEDAR 55 (2018)
Vermilion snapper	Commercial	41%	SEDAR 55 (2018)
Yellowtail snapper	Recreational	15%	SEDAR 64 (2020)
Yellowtail snapper	Commercial	12.5%	SEDAR 64 (2020)

It is likely that most mortality is a function of hooking and handling of the fish when the hook is being removed. Regulatory Amendment 29 to the Snapper Grouper FMP (SAFMC 2020) required descending devices be on board all commercial, for-hire, and private recreational vessels while fishing for or possessing snapper grouper species; the use of non-offset, non-stainless steel circle hooks when fishing for snapper grouper species with hook-and-line gear and natural baits north of 28° N latitude; and all hooks be non-stainless steel when fishing for snapper grouper species with hook-and-line gear and natural baits throughout South Atlantic federal waters. The Council also implemented an extensive outreach and public education program, which along with its citizen science initiative is promoting best fishing practices for all the species it manages. The goal of these regulations is to reduce discard mortality for snapper grouper species.

The actions contained in this regulatory amendment are intended to result in a decrease to bycatch in the snapper grouper fishery; thus, adverse ecological effects due to changes in bycatch in this fishery are expected to be negligible. For more details on ecological effects, see Chapters 3 and 4 of this amendment.

Changes in the Bycatch of Other Fish Species and Resulting Population and Ecosystem Effects

Regulatory Amendment 35 is not expected to result in increased bycatch of other fish species. Both sectors likely target a wide range of species other than snapper grouper during each trip, including dolphin wahoo and coastal migratory pelagic species. This results in a varied amount and type of bycatch of species. The top three species caught with red snapper on a commercial trip in the South Atlantic region are vermilion snapper, gray triggerfish and red porgy (Table G-2). For the recreational sector, it is black sea bass, vermilion snapper, and gray triggerfish (Table G-10). Any closures or reductions in fishing effort of South Atlantic red snapper has the potential to reduce the bycatch of these species.

Table G-10. The top ten species that are commonly caught on recreational trips that caught red snapper in the South Atlantic region. MRIP recreational landings from 2019 to 2021.

Species Landed	Percent of Trips
Black Sea Bass	26.1%
Vermilion Snapper	25.1%
Gray Triggerfish	16.4%
Tomtate	13.3%
King Mackerel	9.7%
Greater Amberjack	7.9%
Almaco Jack	7.2%
Gag	6.3%
White Grunt	5.5%
Cobia	5.3%

Effects on Marine Mammals and Birds

Marine Mammals

Under Section 118 of the Marine Mammal Protection Act (MMPA), the NMFS must publish, at least annually, a List of Fisheries (LOF) that places all U.S. commercial fisheries into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishery. The gears used to catch red snapper are nets, spear, traps, longline and hook-and-line. The longline and hook-and-line gear components of the snapper grouper fishery, which is primarily the gear used to catch red snapper, are determined to have remote

likelihood of/no known interactions with marine mammals (Category III, LOF, 87 FR 23122; April 19, 2022).

Sea Birds

The Bermuda petrel and roseate tern occur within the action area. Bermuda petrels are occasionally seen in the waters of the Gulf Stream off the coasts of North Carolina and South Carolina during the summer. Sightings are considered rare and only occurring in low numbers (Alsop 2001). Roseate terns occur widely along the Atlantic coast during the summer but in the southeast region, they are found mainly off the Florida Keys (unpublished US Fish and Wildlife Service data). Interaction with fisheries has not been reported as a concern for either of these species. Although, the Bermuda petrel and roseate tern occur within the action area, these species are not commonly found and neither has been described as associating with vessels or having had interactions with the dolphin wahoo fishery. Thus, the fishery is not likely to adversely affect the Bermuda petrel and the roseate tern.

Changes in Fishing, Processing, Disposal, and Marketing Costs

The actions proposed in Regulatory Amendment 35 are not expected to substantially alter fishing practices, processing, disposal, or marketing costs in the near or short term in relation to bycatch or discards in the snapper grouper fishery. As shown in the analyses in Chapter 4 of the preferred alternatives for actions potentially affecting catch, costs are not expected to change. Similarly in the long term, it is more likely that current fishing, processing, disposal, and marketing costs would be maintained at or near their status quo levels, thus leading to no anticipated changes.

Changes in Fishing Practices and Behavior of Fishermen

The actions proposed in Regulatory Amendment 35 are not expected to end overfishing. The reduction of the OFL, ABC, and total and sector ACLs has the potential to decrease, or increase, discards. However, the gear modifications proposed in Regulatory Amendment 35 have the potential to decrease discards. Also, any changes to fishing behavior and subsequent changes in the level of discards or discard mortality that may result from the actions in the amendment are expected to be a reduction from the current amount of discards in the fishery.

Changes in Research, Administration, and Enforcement Costs and Management Effectiveness

Research

Research and monitoring is ongoing to understand the effectiveness of implemented management measures and their effect on bycatch. The SEFSC is developing electronic logbooks, which could be used to enable fishery managers to obtain information on species composition, size distribution, geographic range, disposition, and depth of fishes that are released. Further, a joint Commercial Logbook Reporting Amendment is being developed by the Council and the Gulf of Mexico Fishery Management Council, which would require electronic reporting of landings information by federally permitted commercial vessels to increase the

timeliness and accuracy of landings and discard data. The For-Hire Reporting Amendment requirements should improve timeliness and quality of data for the charter and headboat components of the recreational sector.

Cooperative research projects between science and industry are available each year in the form of grants from Marine Fisheries Initiative, Saltonstall-Kennedy program, and the Cooperative Research Program. These programs can provide research funds for observer programs, as well as gear testing and testing of electronic devices. A condition of funding for these projects is that data are made available to the Councils and NMFS upon completion of a study.

Administration

The proposed actions are not expected to significantly impact administrative costs.

Enforcement

The proposed actions are not expected to significantly impact enforcement costs.

Changes in the Economic, Social, or Cultural Value of Fishing Activities and Non-Consumptive Uses of Fishery Resources

Changes in economic, social, or cultural values are discussed in Chapter 4. None of the actions and alternatives in Regulatory Amendment 35 are likely to reduce the current level of bycatch of target or non-target species in the South Atlantic, and thus are unlikely to change the social, economic, or cultural value of fishing activities and non-consumptive uses of the snapper grouper fishery.

Changes in the Distribution of Benefits and Costs

The distribution of benefits and costs expected from the proposed actions in Regulatory Amendment 35 are discussed in the economic and social effects analysis in Chapter 4. These effects are discussed in relation to the baseline economic and social conditions of the fishery and fishing communities outlined in Chapter 3 of the document. Additionally, the Regulatory Impact Review (Appendix B) and Regulatory Flexibility Act Analysis (Appendix C) provide additional information on changes in the distribution of benefits and costs. Overall, this amendment is not expected to increase bycatch in a way that would change the distribution of benefits and costs.

Social Effects

The baseline social environment and social effects of the proposed actions are described in Chapters 3 and 4 of Regulatory Amendment 35, respectively. In general, fishermen become frustrated as waste of the resource increases due to regulatory bycatch of target and non-target species. This often results in a distrust of science because regulations are intended to protect stocks and rebuild overfished stocks by reducing such bycatch. However, none of the actions and alternatives in Regulatory Amendment 35 are likely to increase the current level of bycatch of target or non-target species in the South Atlantic and thus are unlikely to result in the negative social effects described.

Conclusion

This BPA evaluates the practicability of taking additional action to minimize bycatch and bycatch mortality using the ten factors provided at 50 C.F.R. § 600.350(d)(3)(i). In summary, the proposed actions in Regulatory Amendment 35 are intended to reduce the current level of bycatch in the snapper grouper fishery. The Council, NMFS, and the SEFSC have implemented, and plan to implement, numerous management measures and reporting requirements that have improved, or are likely to improve the monitoring efforts of discards and discard mortality.

Appendix H. Best Fishing Practices Outreach Campaign

I. Release Survivorship in the Snapper Grouper Fishery

Regulatory measures combined with growing fishing effort in the South Atlantic snapper grouper fishery, particularly from the recreational sector, have led to a drastic increase in the number of non-target snapper and grouper that must be released. Due to the multispecies nature of the snapper grouper fishery, it is common for non-target species to be caught and released due to regulatory or other reasons, while fishing for other species. The increase in releases has led to an increase in the number of fish that die after being caught and released. This problem is illustrated by red snapper where the number of dead releases far outnumbers fish removed from the population by harvest (SEDAR 73 2021). Large numbers of released fish limit the Council's ability to prevent overfishing and reduce the number of fish that can be sustainably landed by the fishery. While there are management and fishermen efforts in place aimed at improving survival after release through best fishing practices (BFP) and the use of descending devices, more outreach and education are needed to ensure these practices become ubiquitous throughout the fishery.

II. Outreach and Education Goals and Objectives

- Increase knowledge of fishing methods that will improve survivorship of released snapper grouper species, including:
 - Understanding of barotrauma
 - Signs of barotrauma
 - Types of descending devices
 - Proper use of descending devices
 - Proper handling techniques
 - Avoidance of non-target species
 - Stock benefits from increased use of BFP
- Encourage the active use of BFP when fishing for snapper grouper species.
- Improve knowledge of Council regulations related to BFP, including descending devices and circle hooks.
- Gather information on the utilization of descending devices and other BFP.
- Increase knowledge of and participation in Council activities.
 - Citizen Science Program including SAFMC Release project.
 - Opportunities to serve on advisory panels or make public comments.
- Build and maintain relationships with fishing communities.
 - Periodic contact both in-person and via email.
 - Consistent distribution of BFP and Citizen Science outreach materials.

III. Current Outreach and Education Efforts

Important Note: This level of outreach would *not* be possible without the help of our stakeholders and government partners. The South Atlantic Sea Grant offices involved in the multi-year, multi-state reef fish extension grant are collaborating with the Council to provide a South Atlantic Reef Fish Extension/Communication Fellow (Ashley Oliver) to address the communication and outreach needs of the snapper grouper fishery and BFP. While housed at the Council office, the fellow is financially supported through Sea Grant. Additionally, state agencies, local community leaders, and advisory panel members have been instrumental in helping staff find opportunities to share BFP information.

Moreover, the BFP and citizen science outreach campaign for SAFMC Release have become close partners due to their overlapping goals and messages. Both projects encourage the use of BFP and the SAFMC Release project provides an opportunity to gather information on descending device usage, a key research recommendation from recent SEDAR assessments. This partnership has allowed staff to leverage limited resources with both projects optimizing time and funding to increase the potential impact of both initiatives.

South Atlantic Reef Fish Extension/Communication Fellow

The South Atlantic Reef Fish Extension/Communication Fellowship is responsible for engaging in extension programming and communication projects that work to advance stakeholder understanding of snapper grouper issues and management, BFP, and advances in research related to snapper grouper species. The following outreach strategies are employed by the fellow:

- Tackle Shop Tours
 - Traveling to tackle shops, marinas, and fishing clubs to chat engage and inform stakeholders and distribute educational materials.
 - Developing a tackle shop database to help guide outreach efforts (i.e., which tackle shops cater to offshore anglers, have descending devices in stock, etc.)
 - Such tackle shops have and will continue to be revisited in the future to build relationships and further education.
- Fishing Seminars
 - Working with fishing community leaders and local businesses to hold seminars where staff can demonstrate BFP and provide information on the Citizen Science Program.
- Charter Trips
 - Take charter trips with outdoor writers and social media influencers in the South Atlantic region to demonstrate BFP and citizen science efforts and share how stakeholders can contribute to sustainable management and scientific data collection.
- Industry Events
 - Attending various fishing industry events, such as ICAST (International Convention of Allied Sportfishing Trades) to spread awareness of BFP, Citizen Science, and Council management.

Activities Completed in 2022:

- Tackle shops in the following areas were visited:
 - Outer Banks North Carolina (Hatteras, Manteo, Kitty Hawk),
 - Northern South Carolina (Myrtle Beach, Murrells Inlet, Georgetown),

- Central South Carolina (Charleston),
- Southern South Carolina (Beaufort, Hilton Head),
- Northern Georgia (Savannah),
- Southern Georgia (Darien, Brunswick),
- Florida Keys (Miami, Key Largo, Marathon, Key West).
- “Responsible and Effective Bottom Fishing” seminar with local charter captains, Mark Phelps, and Chuck Griffin, at Haddrell’s Point Tackle on 4/27 in Mt. Pleasant, South Carolina.
 - Approximately fifty people attended exhibiting interest in BFP and SAFMC Release,
 - BFP and SAFMC Release information provided as part of seminar and outreach materials distributed.
- Outreach at the Governor’s Cup Billfishing Series tournament in Georgetown, South Carolina.
 - Web analytics showed a large spike in traffic to the Council’s BFP webpage following this outreach effort.
- ICAST 2022
 - International Convention of Allied Sportfishing Trades (ICAST) is the world’s largest sportfishing trade show held annually in Orlando, Florida,
 - Council 10 X 20’ educational exhibit focusing on BFP and SAFMC Release as part of the show's Conservation Corner,
 - Unique opportunity to talk with leaders in the industry, make contacts, and further develop partnerships,
 - Encouraged attendees to carry descending devices and Council informational materials in their store.
- Charter trip with Good Times Sportfishing and local writers in Hatteras, North Carolina.
- Charter Guide Summit with SC Department of Natural Resources (Charleston, Murrells Inlet, Lemon Island, SC).
 - Provided information on BFP and SAFMC Release to charter captains as part of the summits conducted by SCDNR.

Upcoming Outreach Activities through 2022:

- Tackle shop outreach in southern North Carolina (Wilmington).
- Charter trip with Miss Judy Charters and local writers in Savannah, Georgia.
- Content creation trip to gather photo and video footage of descending device use and SAFMC Release for use in outreach materials.

SAFMC Release Project

SAFMC Release, a project developed through the Council’s Citizen Science Program, partners with recreational, for-hire, and commercial fishermen to collect information about their released shallow water grouper and red snapper using the free mobile app, SciFish. Data collected through the app includes fish length, depth caught, hook type, use of descending devices or venting, and occurrence of shark depredation. This information provides valuable insight into the age and survivorship of released fish which addresses a SAFMC citizen science research priority and SEDAR research recommendations.

Current Education & Outreach Activities

Current SAFMC Release outreach activities are listed below. These activities are being led by the Citizen Science Project Coordinator (contractor) with the support and oversight of the Citizen Science Program Manager (full time staff member). Activities in italics were conducted in direct collaboration with the BFP campaign and were highlighted above. Communications with project participants (newsletters, social media, etc.) regularly highlight BFP messages.

- Partnerships with agencies in their outreach
 - Examples of partnerships:
 - NCDMF: Mailing sent to 10,000 licensed recreational saltwater anglers with information about the project; laminated flyers with QR code for SAFMC Release placed at approximately 100 boat ramps
 - SCDNR: *Presented at charter summits held in Charleston, Murrells Inlet, and Beaufort, SC*
- *Hosting of educational seminars about BFP and SAFMC Release*
- Attending industry events
 - *ICAST in July 2022*
- *Tackle shop visits throughout the region*
- *Charter trips for content creation*
- Regular email and phone communication with participants.
 - Thank you emails following submissions
 - Answering questions about the project
 - Follow-up emails with new participants approximately one month after they join the project
- Monthly newsletters for participants
- Weekly social media posts
- Annual data summaries, which are shared with participants

Descending Device Outreach Coordination Team

Organized by staff at the Florida Fish and Wildlife Conservation Commission (FWC), the Descending Device Outreach Coordination Team provides a venue for state agencies, federal agencies, and non-profits working on BFP outreach to share strategies and collaborate on initiatives. The Reef Fish Extension/Communication Fellow, Citizen Science Project Coordinator, and other Council staff participate as members of this team. During ICAST 2022, the Descending Device Outreach Coordination Team hosted a “Donuts and Descending” event that brought ICAST attendees to the Conservation Corner to learn about barotrauma in snapper grouper species and methods to improve survival of released fish, including BFP and use of descending devices. The event was well attended, and the Coordination Team is currently working on hosting a larger event during ICAST 2023.

IV. Proposed Expansion of Best Fishing Practices Outreach and Education

Goal: Increase the overall use of BFP, including descending devices, in the South Atlantic snapper grouper fishery by increasing stakeholder awareness of the need to improve survival of released fish and BFP regulations currently in place.

Overview: The Citizen Science Project Coordinator, who is leading SAFMC Release outreach efforts, is currently funded through the end of 2023. Funding for the Reef Fish

Extension/Communication Fellowship is available through 2024. Current BFP outreach activities are limited by available funding and staff. To maintain and increase BFP outreach efforts, additional staff will be required. To maintain the SAFMC Release project's outreach and expand their capacity to implement new engagement strategies, the Citizen Science Project Coordinator position needs to be extended beyond 2023. As such, an additional full-time best fishing practices outreach position and funds to extend the current Citizen Science Project Coordinator position are recommended. These positions are necessary to maintain the connections and relationships built with participants and stakeholders throughout the region.

The BFP and SAFMC Release campaigns are focused on behavior change within the snapper grouper fishery. Fostering change within the fishery is a long-term goal that requires regular interaction with stakeholders over a significant period to achieve. These outreach initiatives are crucial to the development and maintenance of relationships with fishing communities. This work not only contributes to the continued use of BFP and the long-term retention of SAFMC Release users and increased data submission, but also provides the opportunity for regular, two-way communication with constituents. Staff and fishermen can discuss signs of barotrauma, descending device use, Council regulations related to BFP, Council activities, opportunities to get involved, and what fishermen are seeing on the water. It is important that the individuals conducting this engagement be long-term, full-time staff members with health benefits to avoid the loss of these connections at the end of short contract periods.

The chosen best fishing practices candidate will supplement the work currently being done by the Reef Fish Extension/Communication fellow, including organizing fishing seminars, attending industry events, and fishing tournament, but will also focus on reaching a broader group of snapper grouper stakeholders by creating a marketing and promotion strategy for BFP throughout the South Atlantic region.

As detailed in the above section, logging information on released fish through the SAFMC Release project is considered a best fishing practice. Therefore, expansion of BFP outreach extends to the Citizen Science Program. Expanding the outreach and engagement capabilities of the Citizen Science Program by funding an additional year of the Citizen Science Project Coordinator will allow staff to increase recruitment and retention efforts for the SAFMC Release project, further providing fishermen with the opportunity to gather data on released fish and on their descending device usage. These efforts will contribute to the data available to manage the snapper grouper fishery.

Best Fishing Practices Outreach Specialist Position Description:
Complement current Reef Fish Extension/Communication Fellow and Citizen Science Program efforts:

Current efforts by the Reef Fish Extension/Communication Fellow and Citizen Science Project Coordinator, as detailed above, are limited due to funding and available staff. To increase the reach and efficacy of this work, the BFP Outreach Specialist would support these efforts once funding ends for the Communications Fellow and Citizen Science Project Coordinator.

- **Organizing fishing seminars:** seminars have been valuable opportunities for education regarding BFP and SAFMC Release as well as relationship-building with members of the fishing community.
- **Attending fishing tournaments and other industry events:** while there are few reef fish tournaments, often snapper grouper anglers will participate in a wide variety of fishing tournaments.
 - Example tournaments:
 - [Governor's Cup](#) - South Carolina
 - [Carolina Sportsman](#) - lists monthly various species tournaments (King mackerel, Spanish mackerel, red drum etc.) in North Carolina
 - [Marlin Magazine](#) - lists monthly billfish tournaments in Florida
 - Example industry events:
 - [ICAST](#)
 - [ASA's Sportfishing Summit](#)
- **Additional mailings to potential SAFMC Release participants** about the project, as well as BFP, either solely by SAFMC or in partnership with other agencies performing outreach.
- **Additional personal communication with SAFMC Release participants** via phone and email. Most participants who submit data are fishermen with whom we have built a strong relationship, making this a critically important communication effort.
- More **tackle shop visits** throughout the Southeast region (both initial and repeat visits).
- Assist in organizing and conducting **content creation and media charter trips**.

New efforts to be led by the Best Fishing Practices Outreach Specialist:

- **Marketing and advertising**
 - Produce videos, ads, and physical materials such as, but not limited to, billboards, targeted social media, push notifications on various weather applications, others, focusing on various best fishing practice subjects.
 - General information about the South Atlantic Council, current issues in the snapper grouper fishery, and the importance of BFP
 - SAFMC Release (what is it, how to use it, and why to use it)
 - How to use a descending device
 - How to make your own descending device
 - Regulatory BFP requirements in the South Atlantic
 - How to properly vent a fish

- Best handling practices, non-target species avoidance, and other Council regulations pertaining to BFP
- Create an optional interactive outreach tool to test users on their knowledge of BFP. To make it engaging, ideas include adding short videos, pictures, and a game.
 - Housed on BFP webpage. Depending on the platform, it may be possible to gather information on what users get correct and incorrect.
 - Example questions:
 - “What signs of barotrauma are being exhibited by this gag grouper?”
 - “What best fishing practice is being done incorrectly in this video?”
 - “How much weight should be attached to a descending device?”
 - After playing a short video about SAFMC Release: “Would you like to help inform managers on what you are seeing on the water?”
- Create a “Best Fishing Practice Master Volunteer Program” (become a BFP MVP!) that trains volunteers to become experts in all things Best Fishing Practices and encourages them to train others in their fishing community.
 - In person workshops in the region to share best fishing practice information, learn from BFP MVPs on their thoughts on effectively sharing this information with their communities, and create a network of other attendees.
 - Target audiences:
 - Port samplers
 - Marine Resources Education Program (MREP) graduates
 - Federal for-hire permit holders
 - State and federal agencies (North Carolina Division of Marine Fisheries, South Carolina Department of Natural Resources, Georgia Department of Natural Resources, Florida Fish and Wildlife Conservation Commission, U.S. Coastguard, NOAA (National Oceanic and Atmospheric Administration) Office of Law Enforcement)
 - SAFMC Advisory Panel members
 - SAFMC Release Participants
 - Campaign by mailings, seminars, tackle shop outreach, advertisements, partnerships
 - BFP MVPs to receive a certificate once completed, giving attendees an opportunity to market their “MVP” status and encourage others to become a BFP MVP

New efforts to be led by the Citizen Science Project Coordinator:

- **Explore organizing periodic short fishing “tournaments” to facilitate discussions about BFP and increased SAFMC Release submissions.**
 - Such tournaments are envisioned to be virtual in nature. Potentially held in partnership with other agencies or companies, participants would be encouraged to log their releases within a given period but would not be attending an in-person event.
 - The tournament prizes and sampling design will be adjusted to encourage submission of the specific data needed. Such specificity will not only enhance the effectiveness of this effort but will also avoid an increase in the pressure placed on closed species.
- **Develop and implement additional points of contact with SAFMC Release participants**
 - Push notifications and/or text notifications
 - Additional email check-ins
 - Gathering and sharing participant testimonials
- **Establish a SAFMC Release participant recognition program**
 - Encourage long-term retention and continued release submissions by recognizing participants’ contributions in a more formalized manner (currently, we send thank you emails).
 - Such a program could feature those who excel in certain categories, such as:
 - The most fish logged
 - The most fish descended
 - The longest fish logged of a particular species
 - The shortest fish logged of a particular species
 - Participants and their achievements in the above categories could be featured in the SAFMC Release newsletter and highlighted on the Council’s social media.

The Best Fishing Practices Outreach Specialist and Citizen Science Project Coordinator would also attend various workshops, advisory panel, and Council meetings within the South Atlantic, as appropriate.

v. **Evaluation of Current and Future Outreach and Education Campaigns**

Evaluation of the outreach efforts proposed in this appendix will be key in ensuring that the goal of increasing the use of BFP in the South Atlantic snapper grouper fishery is achieved. Yet, it can be challenging for Council staff to complete this work due to time and funding constraints as well as policy constraints due to the Paperwork Reduction Act (PRA). However, in recent years, there has become increased interest in exploring stakeholder perception and usage of BFP, namely barotrauma mitigation tools like descending devices. Several survey-based studies have

been completed throughout the South Atlantic and Gulf of Mexico region (described below¹⁵). However, they all ask slightly different questions, focus on different areas, or are not longitudinal in nature, making it challenging to determine changes in fishing behavior throughout the South Atlantic region.

To help aid the Council, researchers conducting work on BFP perceptions, outreach, and usage would be invited to a workshop to present their work and discuss how it may benefit the Council's BFP program. Specific goals and objectives will be developed as the workshop is organized, but broadly the purpose would be to:

- 1) Learn more about current research efforts underway in the South Atlantic region.
- 2) Discuss how past research efforts can be used to create a baseline for BFP use in the snapper grouper fishery.
- 3) How future research can be used to help determine the effectiveness of different BFP.
- 4) How future research can help quantify changes in fishermen behavior over time, as it relates to BFP usage.

Examples of recent BFP studies conducted in the South Atlantic and Gulf of Mexico regions:

Southeast Florida and South Carolina Anglers' Release Practices and Their Attitudes Toward Descending Devices (The Nature Conservancy)

- In 2020(?), the Nature Conservancy conducted a survey of anglers who fished in Southeast Florida or South Carolina for several species of fish that are included in the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP). The survey found that a slight majority of anglers had noticed signs of barotrauma and were familiar with the term. Additionally, most surveyed anglers in both states were familiar with descending devices. However, only a quarter to a third have used descending devices. The baseline data collected in this study can be compared to future surveys to examine trends in attitudes, behavior, and the effectiveness of outreach campaigns.

Awareness, Attitudes, Perceptions, and Use of Best Fishing Practices by Recreational Reef Anglers in the Gulf of Mexico (The Gulf States Marine Fisheries Commission)

- The purpose of this study was to gather baseline information on recreational angler behavior and knowledge of best fishing practices in the Gulf of Mexico. A follow-up study will be conducted in 2024 to measure changes in angler knowledge of best fishing practices. This initial survey found that anglers want to help release fish survive, however there is a lack of knowledge around descending devices and their benefits. The full report can be found here: <https://www.gsmfc.org/publications/GSMFC%20Number%20312.pdf>

Reef Fish Extension Program Surveys

¹⁵ This is not an exhaustive list of research conducted in the southeast region on angler attitudes and behaviors relative to best fishing practices. The initiatives listed here include efforts to gather baseline information *and* to conduct future surveys to estimate changes in angler knowledge because of outreach efforts.

- As part of the broader Reef Fish Extension Project, Sea Grant fisheries extension specialists and university scientists are conducting annual surveys of reef fish stakeholders to identify pressing research needs as well as stakeholder attitudes, perceptions, and beliefs regarding the management of snapper grouper species in the Gulf of Mexico and South Atlantic regions.

SAFMC Release

- Data collected through the SAFMC Release project, including use of descending devices, will be summarized, and considered for use in upcoming stock assessments and relevant management actions. Additionally, SAFMC Release has developed goals and objectives to help evaluate and make improvements to the project over time.

Appendix I. Allocation Review Trigger Policy

In a letter to the NOAA Assistant Administrator dated July 16, 2019, the South Atlantic Fishery Management Council (Council) responded to NOAA's Fisheries Allocation Review Policy (NMFS Policy Directive 01-119) and the associated Procedural Directive on allocation review triggers (NMFS Procedural Directive 01-119-01). The Policy established the responsibility for the Regional Fishery Management Councils to set allocation review triggers and consider three types of trigger criteria: indicator, public interest, and time. Councils were directed to establish triggers for consideration of allocation reviews by August 2019. The Council's response follows:

The Council has reviewed species allocations on numerous occasions in the past. However, these reviews may not have been formally documented in a fishery management plan amendment if a decision was made not to modify sector allocations. This new policy will ensure all species currently having sector allocations will be reviewed on a regular basis and will formalize the allocation review process so the Council's consideration of allocations will be documented.

The Council reviewed their current sector allocations and began discussions on the Policy and Procedural Directives and criteria for considering fishery allocation reviews at their December 2018 meeting. At their June 2019 meeting, the Council adopted two types of criteria for triggering consideration of an allocation review: indicator and time.

The Council chose several indicator-based criteria as triggers:

- Either sector exceeds its ACL or closes prior to the end of its fishing year three out of five consecutive years,
- Either sector under harvests its ACL or OY by at least 50% three out of five consecutive years,
- After a stock assessment is approved by the SSC and presented to the Council, and
- After the Council reviews a species Fishery Performance Report.

The Council chose a time-based trigger to ensure allocation reviews are regularly considered. Each species will have its sector allocations reviewed not less than every seven years. Table 1 shows by species when the next sector allocation review will be considered by the Council should an indicator-based criterion not be triggered. Regardless of whether consideration of an allocation review is triggered by an indicator or time criterion once it occurs the next one will automatically be scheduled for consideration seven years later. For species which are jointly managed with the Gulf of Mexico Fishery Management Council, the timing for consideration of allocation reviews was coordinated with that council.

A public interest-based criterion was not selected because the Council currently receives substantial and regular comment from the public through scoping and public hearing sessions,

general public comment periods held at every Council meeting, the public comment form on the Council’s website, and through other more informal channels. Thus, the Council decided the existing Council process provides sufficient opportunity for public input on allocation.

Table I-1. Next year for allocation reviews (as of 2019) for SAFMC managed species.

Assessed Species	Review Year
Black grouper	2026
Black sea bass	2023
Blueline Tilefish	2020
Gag	2022
Golden tilefish	2021
Gray Triggerfish	2023
Greater amberjack	2021
GA-NC Hogfish	2023
FLK/EFL Hogfish	2023
Mutton Snapper	2023
Red grouper	2023
Red porgy	2021
Red snapper	2024
Snowy grouper	2021
Vermilion snapper	2021
Wreckfish	2019
Yellowtail Snapper	2021
Atlantic Group KingMackerel	2021
Atlantic Group Spanish Mackerel	2022
Gulf Group Cobia- FL East Coast Zone	2021
Unassessed Species	
Atlantic Spadefish	2022
Bar Jack	2022
Scamp	2022
Speckled hind*	*
Warsaw grouper*	*
DeepwaterComplex	
Yellowedge Grouper	2024
Silk Snapper	2024
Misty Grouper	2024
Sand Tilefish	2024
Queen Snapper	2024

Blackfin Snapper	2024
Jacks Complex	
Almaco Jack	2025
Banded Rudderfish	2025
Lesser Amberjack	2025
Snappers Complex	
Gray Snapper	2025
Lane Snapper	2025
Cubera Snapper	2025
Grunts Complex	
White Grunt	2024
Sailor's Choice	2024
Tomtate	2024
Margate	2024
Shallow-Water Groupers Complex	
Red Hind	2026
Rock Hind	2026
Yellowmouth Grouper	2026
Yellowfin Grouper	2026
Coney	2026
Graysby	2026
Porgy Complex	
Jolthead Porgy	2027
Knobbed Porgy	2027
Saucereye Porgy	2027
Scup	2027
Whitebone Porgy	2027
Dolphin/Wahoo	
Dolphin	2019
Wahoo	2019

*ACL=0 for this species. If ACL>0 in the future, allocations will be reviewed when the ACL is increased.

Appendix J. SEDAR 73 (2021) Red Snapper Projection Tables

Table J.1. Scientific and Statistical Committee’s recommended projection for South Atlantic red snapper acceptable biological catch, based on SEDAR 73 (2021) with F= F30 starting in 2022 and recent average recruitment. Benchmarks are based on Block 3 and discard mortality on Block 4 with no reallocation of F toward landings. R = number of age-1 recruits (in 1000s), F = fishing mortality rate (per year), S = spawning stock (1e8 eggs), L = landings expressed in numbers (n, in 1000s) or whole weight (w, in 1000 lb), D = dead discards expressed in numbers (n, in 1000s) or whole weight (w, in 1000 lb), and pr.reb = proportion of stochastic projection replicates with $SSB \geq SSB_{F30}$. The extension “b” indicates expected values (deterministic) from the base run; the extension “m” indicates median values from the stochastic projections.

Year	R.b	R.m	F.b	F.m	S.b	S.m	L.b(n)	L.m(n)	L.b(w)	L.m(w)	D.b(n)	D.m(n)	D.b(w)	D.m(w)	pr.reb
2020	718	628	0.39	0.34	307585	325212	40	39	416	409	443	407	2019	1910	0.053
2021	718	629	0.35	0.31	347034	372325	39	38	420	413	332	288	1626	1473	0.117
2022	718	629	0.21	0.21	401322	430186	25	28	284	319	195	189	983	996	0.206
2023	718	629	0.21	0.21	465178	491225	28	31	327	363	202	191	1036	1016	0.307
2024	718	629	0.21	0.21	529917	551037	31	33	368	403	207	194	1076	1034	0.415
2025	718	630	0.21	0.21	593360	608291	33	35	408	441	210	196	1104	1050	0.526
2026	718	623	0.21	0.21	653509	662653	35	36	446	475	211	196	1122	1062	0.637
2027	718	630	0.21	0.21	710246	712268	36	38	480	506	212	197	1133	1067	0.733
2028	718	629	0.21	0.21	762093	757711	38	39	511	533	212	197	1138	1072	0.81
2029	718	630	0.21	0.21	809274	799286	39	40	538	559	212	197	1143	1076	0.871
2030	718	624	0.21	0.21	851779	835646	40	41	562	581	212	198	1146	1080	0.915
2031	718	625	0.21	0.21	889553	868429	41	42	584	602	212	198	1148	1083	0.946
2032	718	628	0.21	0.21	923163	896936	42	43	603	619	213	198	1151	1086	0.968
2033	718	627	0.21	0.21	952682	921751	42	44	620	635	213	198	1153	1092	0.98
2034	718	631	0.21	0.21	978473	944097	43	44	634	649	213	199	1154	1093	0.988
2035	718	629	0.21	0.21	1001094	963960	44	45	647	662	213	199	1156	1096	0.993
2036	718	626	0.21	0.21	1020799	981064	44	45	658	673	213	199	1157	1097	0.996
2037	718	630	0.21	0.21	1037826	995602	44	45	668	683	213	199	1158	1099	0.998
2038	718	629	0.21	0.21	1052612	1008953	45	46	676	692	213	199	1159	1103	0.999
2039	718	629	0.21	0.21	1065380	1019871	45	46	683	698	213	199	1160	1103	0.999
2040	718	630	0.21	0.21	1076422	1030010	45	46	689	704	213	198	1161	1102	1
2041	718	634	0.21	0.21	1085957	1038653	45	47	695	710	213	199	1161	1105	1
2042	718	627	0.21	0.21	1094186	1046759	46	47	699	715	213	199	1162	1102	1

2043	718	631	0.21	0.21	1101288	1053572	46	47	703	719	213	199	1162	1103	1
2044	718	627	0.21	0.21	1107417	1059173	46	47	707	722	213	199	1163	1104	1